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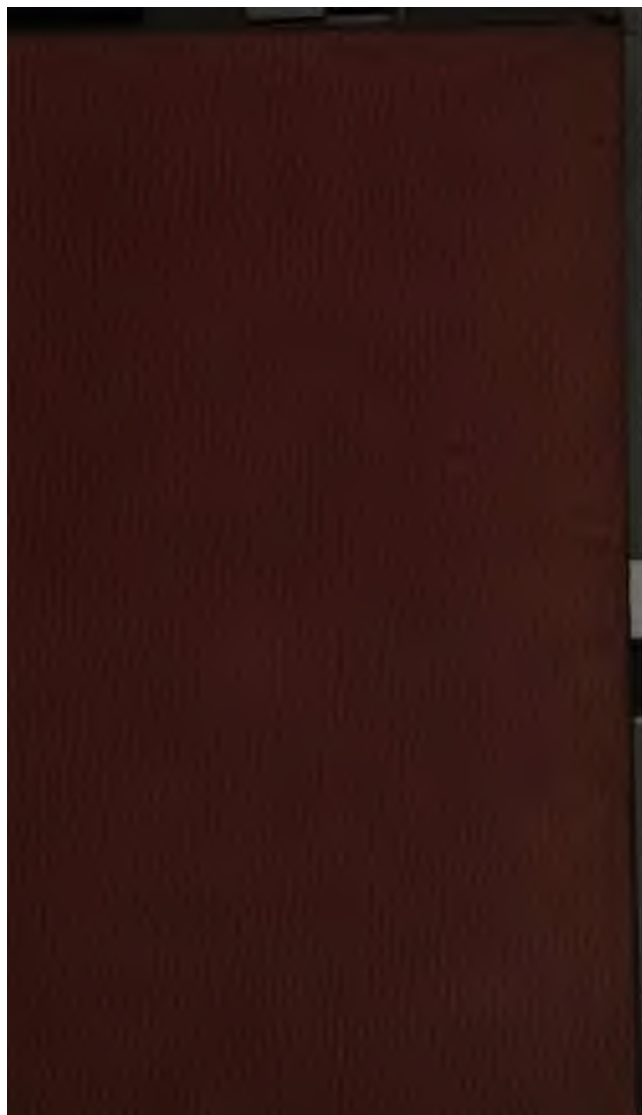
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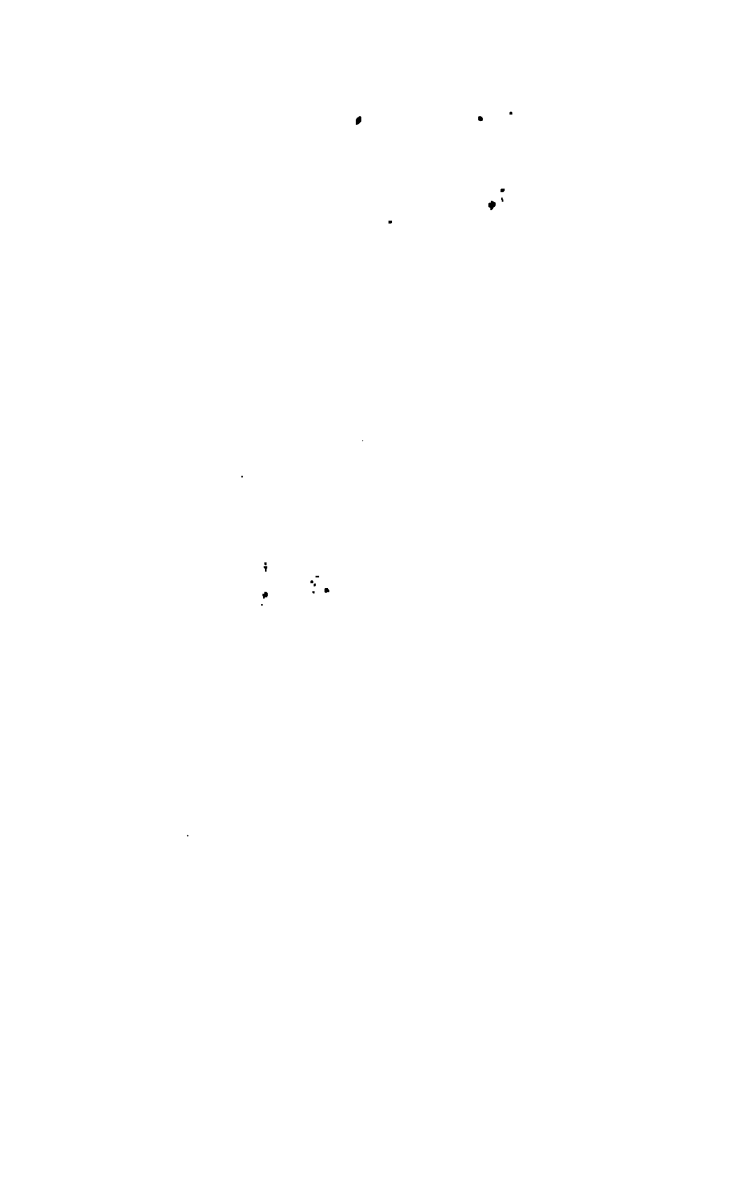
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GEOGRAPHY

OF

Australia and New Zealand.

BY

JAMES BONWICK,

AUTHOR OF

"GEOGRAPHY," "GRAMMAR," AND "READER," FOR
AUSTRALIAN YOUTH, &c., &c.

THIRD EDITION.

+

MELBOURNE:

GEORGE ROBERTSON, 85 COLLINS STREET EAST.
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ERRATA.

	PAGE
Liverpool range to north, not south	15
Darlington N. not S. of Hunter, in Map	
Zamia Creek, not Lamia	51
Bighteen, for Eightpence	62
May Day Hills, not May	91
Cape Otway road, not river	116
Batman and Fawkner in 1835, not 1836	119
	121
Population "75,000," not 100,000	144
Western chain to westward	145
Onse into Derwent, not Clyde	148
Leven, not Severn	149
Mouth of Tamar, not South	151
West of Bruni, not South	151
Hythe at Southport, not Swanport	154
Sorell, not Lovell	155
Black War in 1830, not 1834	162
Howe and Portland Country, not County	168
British in New Zealand 40,000, not 50,000	—

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P R E F A C E.

IN submitting this work to the Public, the Author would crave the indulgence of the critic. Many months of anxious care and research have been employed in a department of literary effort, as little known as it is interesting and practically important. The difficulty of obtaining information relating to these colonies very considerably increased the labour of compilation.

The Australian Colonies are beginning a career of brilliancy and success to which the world has seen no parallel. The writer has endeavoured to furnish intelligence of this wonderful part of the globe, to impart to Australian youth a knowledge of their own home, and, in some humble manner, to open up a new path for the student of history and science.

As an Australian Geographer, the Author has been favoured with many advantages. A resident in three of the colonies for fourteen years, he has had personal observation of localities about which he is writing. He has heretofore published two editions of his "Geography for Australian Youth," and has

thus had the subject prominently before him for ten years. He has had access to public records and has been highly favoured with special reports from several distinguished District Surveyors through the kindness of Andrew Clarke, Esq. Surveyor General of Victoria. To that scientific and worthy officer he is under deep obligations, and the sympathy and aid he has afforded in this undertaking. To the members of the Boards of Education under whose patronage the book is issued, thanks also, are respectfully tendered.

Conscious of the imperfections of the work, and desirous of making subsequent editions as perfect as possible, the author would urgently request the friends of Colonial instruction to furnish him with information, through the bookseller, especially reference to new districts and their physical features. A knowledge of the Geology of these settlements is of no small commercial consequence.

In the composition of such a volume as this, fit for the use of youth, the compiler, as a teacher for the last twenty years, has sought only the employment of conciseness, perspicuity, and simplicity. A mass of facts had to be condensed within a small space.

The maps have been prepared on zinc at much expense, and with suitable regard to accuracy. A larger map of Victoria, including portions of Southern Australia and New South Wales, is publishing as an accompaniment to the Geography, which will be of service in the school-room, the counting

house, and the pack saddle of the traveller. This has been prepared from one executed for the present object, by Mr. Surveyor B. Smyth, through the favour of the Surveyor General; important additions and corrections have been provided by the District Surveyors Messrs. Dawson, Skene, and Scott.

Relying heartily upon support and encouragement from his fellow colonists, this first "Geography of Australia and New Zealand" is respectfully presented by

THE AUTHOR.

Boroondara Boarding School, Victoria,

October 1st, 1855.



CONTENTS.

	PAGE
<i>Australia</i> , Description of 	1
<i>New South Wales</i> , Description of 	5
... ... Discovery and History ...	22
... ... Geology 	30
<i>North Australia</i> , Description of 	39
... ... Discovery 	45
... ... Geology 	51
<i>Western Australia</i> , Description of 	54
... ... Discovery and History ...	60
... ... Geology 	63
<i>South Australia</i> , Description of 	65
... ... Discovery 	75
... ... History 	80
... ... Geology 	83
<i>Victoria</i> , Description of 	89
... Discovery and History 	120
... Geology 	131
... Origin of Gold 	142
<i>Tasmania</i> , Description of 	144
... Discovery and history 	157
... Geology 	163

The following	Description of	..	..
- 1912-1913	0	..	..
- 1913-1914	..	..	..
- 1914-1915	..	..	..
- 1915-1916	..	..	..
- 1916-1917	..	..	..
- 1917-1918	..	..	..
- 1918-1919	..	..	..
- 1919-1920	..	..	..
- 1920-1921	..	..	..
- 1921-1922	..	..	..
- 1922-1923	..	..	..

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GEOGRAPHY

OF

AUSTRALIA & NEW ZEALAND.

AUSTRALIA, the *Southern Land*, comprises the Continent of NEW HOLLAND, or AUSTRALIA PROPER, and the neighbouring Island of VAN DIEMEN'S LAND, or TASMANIA. The several British Settlements upon that continent, including the Colony of Van Diemen's Land, constitute the AUSTRALIAN COLONIES.

The NEW ZEALAND ISLANDS are to the east of New Holland.

This fifth division of the world is in the Southern Hemisphere, being nearly the antipodes of Europe. It is south of Asia, and between Africa and South America. Western Australia is 5000 miles east of the Cape of Good Hope, and New Zealand is 5000 miles west of Cape Horn.

The northern part approaches the equator; being about 4000 miles to the south-east of India, and 4000 to the south of China. The Indian Archipelago of Timor, Borneo, Java, Sumatra and Singapore Islands are between Australia and India; while New Guinea, Spice Islands and

Philippine Isles lie between Australia and China. The Polynesian or South Sea Islands are between Australia and America.

NEW HOLLAND, or AUSTRALIA PROPER, is an immense island. It is placed between the latitudes of 10° and 40° south, and between the longitudes of 110° and 155° east. Its length from east to west is 2500 miles, and its mean breadth 1200 miles; having an area of 3,000,000 square miles, which is fifty times that of England, and one hundred that of Scotland or Ireland.

On the north side is a deep bay, called the Gulf of Carpentaria; on the west is Shark's Bay; on the south are the Australian Bight, Spencer's Gulf, St. Vincent's Gulf, Encounter Bay, Port Phillip and Western Port; on the east are Botany Bay, Port Jackson and Moreton Bay.

Three-fourths of the interior have been untrodden by civilized men. A great inland sea may exist. There are vast sandy deserts. No high ranges nor large rivers are known, but on the eastern side. One chain of mountains passes through the island on that side from north to south; the southern portion of this is called the Snowy Alps.

The rivers of Australia seldom run direct from their sources to the sea. They exist simply as connected water holes, or they lose themselves in swamps or sand, or else flow into some main drainage. Often branches exist, which again unite with the river; these are called *Ana-branches*.

An amount equal to five-sixths of the known

drainage of the continent passes through one channel into the sea. The waters of the great rivers of the Maranoa, Balonne, Macquarie, Bogan, Darling, Murrumbidgee, and Lachlan, fall into the Murray, and so reach the Southern Ocean by an outlet of less than a mile broad and six feet deep.

Many salt lakes are found amidst the barren wastes of the interior. One, Lake Torrens, is 400 miles long. No stream is known to reach the sea along a thousand miles of the southern coast, and as much of the northern.

The continent has been artificially divided into five parts, in each of which English settlers are now found. WESTERN AUSTRALIA is all land west of long. 129° E. NORTH AUSTRALIA is between that and the Pacific Ocean, and north of lat. 26°. SOUTH AUSTRALIA is south of lat. 26°, and between long. 132° and 141°. NEW SOUTH WALES is between long. 141° and the Pacific, and north of the Murray River. VICTORIA is south of the Murray, and east of long. 141°.

In area, Victoria contains 100,000 square miles, South Australia 300,000, New South Wales 450,000, North Australia 1,000,000, and Western Australia 1,000,000. No Government settlements are now in North Australia. The British population of Western Australia is 10,000, of South Australia 100,000, of New South Wales 280,000, and Victoria 300,000. The known aboriginal population is less than 30,000.

Nothing certain was known of New Holland till the year 1605, when a Spanish ship discovered

Torres Strait, and a Dutch ship part of Northern Australia. A chart, bearing date 1542, shows a country south of the Spice Islands, called Great Java, supposed to be part of New Holland.

Western Australia was discovered by the Dutch in 1616; New South Wales, by Captain Cook, in 1770; Victoria, by Bass and Flinders, 1798; and South Australia, by Captain Flinders, in 1802. New South Wales was colonized in 1788, Western Australia in 1829, South Australia in 1836, and Victoria or Port Phillip in 1836.

The Island of TASMANIA, or VAN DIEMEN'S LAND, lies 200 miles south-east of the continent of Australia. It is one-fourth the size of Victoria, containing 100,000 people. It was discovered by Tasman, the Dutchman, in 1642, and settled in 1804.

The three NEW ZEALAND islands are about 1500 miles eastward of New South Wales, with an area of 100,000 square miles, an English population of 50,000, and a native population of 100,000. Part was seen by Tasman in 1642, but the islands were circumnavigated by Cook in 1769. The colony was established in 1841.

Each of these colonies is governed by councils, under the superintendence of a governor appointed by the Queen of England. The governor in chief of Australia resides at Sydney.

NEW SOUTH WALES.

New South Wales Colony extends northward to latitude 26° S., westward to longitude 141° E., eastward to the Southern Pacific Ocean, and southward to Victoria, from which it is separated by the river Murray.

The northern boundary, on the twenty-sixth degree of latitude, is 750 miles in length; the western, on the one hundred and forty-first degree of longitude, dividing it from South Australia, is 550; the southern boundary is 1700, following the windings of the Murray to Forest Hill, and thence by a line of 120 miles south-east to Cape Howe.

The absolute length of the country is 800 miles, and its mean breadth 550, giving an area of 450,000 square miles; being five times that of Victoria, and eight times that of England. The population is 280,000; the aborigines are about 10,000.

New South Wales has two great natural features—a mountain chain from north to south, keeping a distance of about 100 miles from the ocean—and a system of waters, draining into one stream, called the Darling, an enormous level tract of country.

Three-fourths of the territory is a vast plain, very scantily supplied with grass and water. The plains and valleys near the mountains are rich and *productive*.

MOUNTAINS.

The mountains of New South Wales are confined almost wholly to the eastern side. To the south are the lofty Alps and Southern Dividing range. The Liverpool Range runs east and west, forming the northern boundary of the old settled districts. Between the Alps and the Liverpool Range are the Blue Mountains, about 100 miles from the sea. Beyond the Liverpool Range, running north and south, is the Great North Dividing Range. There is a coast range in addition to these.

The Snowy Alps form the boundary between Victoria and New South Wales, ranging from 4,000 to 6,000 feet above the level of the sea. Mount Kosciusko, ten miles from the frontier, is 6,500, and Delegate 4,000. The Pilot is two miles north of Forest Hill. The Maneroo Plains form a lofty table land between the coast range and the Alps. Mounts Murray, Gourock, and Tinderry or the Twins, north of Beresford County, are from 5,000 to 6,000 feet. Mount Cooper is the source of the McLoughlan. Im-lay 3,000, Dromedary 2,700, and Howe 1,200, are near Twofold Bay. Mount Ellendon is east of Lake George, and Marulan north east of it.

The Blue Mountain chain extends north of Maneroo, by Lake George; then north of Cullarin Range; north-east by the heads of the Macquarie; north, then east; afterwards north-west, forming the source of the Goulburn; and again north-east to Liverpool Range, near Pandora's Pass.

Among the Blue Mountains sixteen peaks are above 3,000 feet. The King's Table Land, 2,700 feet, is twenty-five miles west of Sydney; and York 3,600, Hay, 2,400, and Victoria with Pass 2,600 feet, are about eighty miles west.

Tayan Pic is the lofty source of the Colo, near Mount Coricudgy, the source of the Cudgegong. Canobolas, near Bathurst, is 4,600 feet, Summer Hill 3,000, Blaxland 3,300, Aldine 3,750, Honeysuckle 4,000, and Ben Bulleen 2,500. The Bylong Range and Dangar are near the Goulburn. The Mittagong Range is between the Blue Mountains and Illawara.

To the north there are Hathill and Broken Back, in Northumberland; and Macarthur, Oxley, and Burning Wingen, in the Liverpool Range. The Warrumbungle is the western extension of the Liverpool Mountains. Seaview Hill, near the Hastings is 6,000 feet. Pandora's Pass, through the Liverpool Range, is 220 miles north-west of Sydney. The Hanging Rock by the Peel is 3,400 feet. The Pennant Hills are north of Paramatta.

The North Dividing Range has some elevated peaks. Ben Lomond is in New England. Lindesay 5,700 feet, Mitchell 4,200, Sturt, Brisbane, and Cordeaux are toward Moreton Bay. Cunningham's Pass is between Cordeaux and Mitchell. Mount Warning, by the Tweed, is 3,300 feet. The Glasshouse Hills are to the north of Moreton Bay. Some high spurs run from the Dividing Range across to the sea.

Beyond the mountain chains, to the west

ward, are several isolated hills and small ranges. The Herries and McLeay ranges are near Darling Downs; the Drummond and Hardwicke by the river Gwydir; the Arbutnot and Vansittart by the Castlereagh; and Oxley's Table Land, near New Year's Range, at the junction of the Bogan and Darling. Mount Abundance, 300 miles north-west of Darling Downs, is near the Maranoa River and the Fitzroy Downs; Grafton Range is on the south side of Fitzroy Downs, lat. 26°.

The D'Urban, Greenough, Macculloch, Scroope, and Golgol Ranges, are by the Darling; and Murchison, Lyell, and Babbage Mountains are west of that river. The Croker, Balloon, and Peel Ranges are near the Lachlan; and Hervey's Range is west of Wellington Valley.

RIVERS.

New South Wales, though a dry country, has some extensive rivers. There are the eastern and the western waters, divided by the Blue Mountains and their continuation, the North Dividing Range. The eastern streams have short courses to the sea. All the western drainage is carried to the Murray River, by the Murrumbidgee and Darling rivers.

The Darling drains an area of 250,000 square miles, from lat. 24° to 34° S. It is known by various names. Its eastern source, called Barwon or Karaula, runs from the Dividing Range, near Darling Downs, receiving from the south-east the following streams:—the Dumaresq,—the

Severn,—the Gwydir,—the Nammooy or Peel from Liverpool Range, with its branches Turra-beile and Parry,—the Castlereagh from Liverpool Range,—the Macquarie, whose junction is in lat. 30°,—the Duck Creek,—and the Bogan or New Year's River at Fort Bourke, from Wellington Valley. The Macquarie is 700 miles long, and Bogan 600.

The north tributaries of the Darling are as follows:—the Maranoa from Mount Owens, near Mantuan Downs, flows southward to the Balonne for 500 miles. The Condamine, from Darling Downs, with its branches, the Dogwood and the Bunce, is the chief source of the Balonne, which, after receiving the waters of the Condamine, Cogoon, and the Maranoa, spreads into the Culgoa and Little Balonne. The Culgoa falls into the Darling, thirty miles above Fort Bourke. The Little Balonne expands into the Narran, Ballandool, Bokhara, and Biree; the first ends in a swamp, the other three unite and reach the Darling twenty miles from the Culgoa entrance.

The Darling receives no tributary for 600 miles, though it may receive the waters of the Warrego from the Mantuan Downs. After a south-western course of 200 miles it meets the Murray, about 100 miles east of the South Australian boundary. The Murrumbidgee rises from the western side of the Dividing Range of Maneroo Plains, 250 miles south-west of Sydney. Its tributaries are the Yass, the Tumut, and the Lachlan or Colare. It falls into the Murray 150 miles east of the Darling mouth, after flowing

Fish and Campbell rivers near the town of Bathurst. At twenty miles below Bathurst the Turon joins the Macquarie; and the Frederick Valley Creek and Summer Hill Creek join it lower down. The Cudgegong runs westward from the Blue Mountains to the Macquarie at Wellington. The Louisa Creek is a branch to the Meroo, flowing into the Cudgegong. The Abercrombie in Georgiana, and the Belubula in Bathurst, are tributaries of the Lachlan.

The southern streams arise from the Snowy Alps, and from the lofty Maneroo Plains between the Alps and the coast range. The Shoalhaven, 200 miles long, rises in the South Dividing Range, and runs northerly and then westerly to the sea above Jervis Bay. The Murroya, with its branch the Araluen, falls into the sea below Bateman Bay, dividing the settled districts from Maneroo. The Clyde runs into Bateman Bay. The Snowy River flows southward from the north of Maneroo into Bass's Straits, near Lake Tyers, and after draining most of the Maneroo country. Its tributaries are the Crakenbac from the west, the Eucumbene from the north, and the McLoughlan from the east.

LAKES.

The lakes are few and shallow. The following are salt lakes, near the sea:—Wallis and Myall, in Gloucester; Macquarie and Tuggerah, in Northumberland; and Illawara in Camden. Lakes Bathurst and George are near Goulburn Plains. Benanee is near the junction of the



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Murray and Murrumbidgee ; Parachute, by the Balonne ; and Burra Burra, by the Abercrombie. The Cowandilla Lake and Laidley's Ponds are by the Lower Darling.

PLAINS.

The principal plains are the Liverpool and Peel, north of Liverpool Range ; Maneroo to the south ; Darling Downs, and Canning Downs, west of Moreton Bay ; Wellington Valley, by the Upper Macquarie ; Yass Plains, south of Yass ; the Goulburn, south-west of Sydney ; Calvert Plains and Fitzroy Downs, on the northern boundary.

BAYS.

The bays of New South Wales are important. Port Jackson, containing Sydney Harbor and many coves, is fifteen miles deep, with a narrow entrance. Botany Bay is a few miles to the south of Port Jackson, and twelve miles north of Port Hacking. Jervis Bay is south of the mouth of the Shoalhaven ; Sussex Haven is near it. Bateman Bay is 170 miles south of Sydney. Twofold Bay, is thirty miles north of Cape Howe.

North of Port Jackson are Broken Bay and Brisbane Water ; Port Hunter in latitude 33° ; Port Stephens ; Farquhar Inlet, at the mouth of the Manning ; Camden Haven ; and Port Macquarie, at the Hastings' entrance. North of Port Macquarie are Trial Bay, the embouchure of the *McLeay* ; and Shoal Bay, of the Clarence. Moreton

Bay to the north is sixty miles long by twenty broad. Wide Bay is in latitude 26° , the northern boundary of the colony.

CAVES.

The capes are Howe, at the south-eastern extremity; Red Point, in Twofold Bay; Cape Dromedary, near latitude 36° ; St. George's Head and Perpendicular, by Jervis Bay; Point Bass, by Illawarra; Hacking and Banks, by Botany Bay; and North and South Heads of Port Jackson. Coal Head is by Port Hunter; Point Stephens, by the Port; Sugar Loaf Point, north-east of Port Stephens, and Penguin Point, Port Macquarie.

North of Port Macquarie are—Smoky Cape, by Trial Bay; Lennox Head and Cape Byron, between the Richmond and Tweed. About Moreton Bay are Point Lookout, in Stradbroke Island; Sandy Point and Cape Moreton, in Moreton Island; Skirmish and Wickham Points, by the Northern Passage; and Red Cliff Point in the Bay.

ISLANDS.

The islands are few. Montague Isle is by Cape Dromedary, and Gabo by Cape Howe. There are five Islands in Illawarra Lake, giving rise to the name. Oxley and Mitchell Isles are at the mouth of the Manning, and Solitary Isles in latitude 30° . Stradbroke, Moreton, and Bribie are in Moreton Bay; the first is thirty

miles long, the second twenty, and the third seventeen. Great Sandy or Frazer Island, seventy miles long, is in Wide Bay.

COUNTIES AND TOWNS.

The settled territory was formerly divided into twenty counties, embracing about 40,000 square miles. Those to the north are Macquarie, Gloucester, Durham, Brisbane, Phillip, and Bligh. To the west are Wellington, Bathurst, and King. To the east are Northumberland, Cumberland, and Camden. To the south are Argyle, Murray, and St. Vincent. In the centre are Roxburgh, Hunter, Cook, Westmoreland, and Georgiana.

MACQUARIE county, containing 2000 square miles, has the McLeay River to the north, the Manning River to the south, and the sea to the east. **GLOUCESTER**, 2930 square miles, has the Manning to the north, the Hunter to the south, the Williams to the west, and the sea to the east. **DURHAM**, 2120 square miles, has the Williams to the east, and the Hunter to the south and west. **BRISBANE**, 2340 square miles, has the Hunter to the east, the Goulburn to the south and west, and the Liverpool Dividing Ranges to the south.

PHILLIP, 1620 square miles, has the Goulburn to the north, the Widdin to the east, and the Cudgegong to the south and west. **BLIGH**, 1680 square miles, has the Cudgegong to the south, Liverpool Range to the north, and Phillip county to the east. **WELLINGTON**, 1660 square miles, has the Cudgegong to the north and east, the

Macquarie and the Bell to the west, and the Turon to the south. ROXBURGH, 1520 square miles, has the Turon to the west, the Macquarie to the south, and the Cudgegong to the north. BATHURST, 1860 square miles, has the Macquarie to the north and east, and the Lachlan to the south.

KING, 1780 square miles, has the Lachlan to the west, the Yass River to the south, and the Narrowa and Cullarin range to the east. GEORGINA, 1920 square miles, has the Narrowa to the west and the Campbell to the east. WESTMORELAND, 1600 square miles, has the Campbell to the west, the Fish to the north, the Wollondilly to the south, and the Cox to the east. COOK, 2660 square miles, has the Cox to the west, the Colo to the north, and the Hawkesbury to the east.

HUNTER, 2050 square miles, has the Colo to the south, the Goulburn and the Hunter to the north, and the Macdonald to the east. NORTHUMBERLAND, 2340 square miles, has the Macdonald to the west, the Hunter to the north, the sea to the east, and the Hawkesbury to the south. CUMBERLAND, 1440 square miles, has the Hawkesbury to the north and west, the sea to the east, and the Nepean to the south. CAMDEN, 2190 square miles, has the Nepean to the north, the Wollondilly to the west, the sea to the east, and the Shoalhaven to the south.

ARGYLE, 1950 square miles, has the Wollondilly and the Shoalhaven to the east, and the Cullarin Range to the west. ST. VINCENT, 2670 square miles, has the Shoalhaven to the north and west, the sea to the east, and Maneroo Plains to the

south. **MURRAY**, 2250 square miles, has the Shoalhaven to the east, the Yass to the north, the Murrumbidgee to the west, and Maneroo Plains to the south.

Other counties have lately been named. **STANLEY** county, by Moreton Bay, contains 1724 square miles. The counties to the north of Stanley are **CANNING**, **MARCH**, **LENNOX**, and **FITZROY**; to the west are **CAVENDISH** and **AUBIGNY**; to the south are **CHURCHILL**, **WARD**, **MERIVALE**, and **BENTINCK**.

The township of Brisbane, near the mouth of the Brisbane, 600 miles north of Sydney, is in Stanley; Warwick, of Darling Downs, on the Condamine, 500 miles, is in Merivale. Drayton of Darling Downs is in Aubigny. Ipswich, on the Bremer, is in Churchill. Maryborough, by Wide Bay, 850 miles, is in March. Gayndah, on the Burnett, 700 miles, is in Fitzroy; Surat is in the Maranoa district, 750 miles north of Sydney.

The counties of **ROUS**, **DRAKE**, **BULLER**, and **RICHMOND**, are by the Richmond River; **RALEIGH**, **GRESHAM**, and **CLARENCE** by the Clarence River; **GOUGH** and **CLIVE**, by the Severn; **HARDINGE**, by the Gwydir; **SANDON**, **DUDLEY**, and **VERNON**, by the McLeay; **PARRY**, **BUCKLAND**, and **POTTINGER**, north of Liverpool Ranges; **INGLIS** and **DARLING**, by the Peel River; **NAPIER**, **GOWEN**, and **LINCOLN**, north of Bligh county; **HAWES**, by the Hastings River.

The township of Dubbo, 250 miles north west of Sydney, is in Lincoln. Tamworth on the Peel, 250, is in Inglis. Harging Rock is 30 miles from Tamworth. Grafton, on the Clarence River,

350 from Sydney, is in Clarence. Cassino, on the Richmond River, is in Ross. Armidale, 300, and Tilbuster, are in Sandon. Tenterfield, near the Severn, is 420 north of Sydney, and Dundee 380. Tabulum, on the Clarence, is 50 miles east of Tenterfield, Bolivia 20 south, and Maryland 50 north of it. The last five are in New England.

The new western counties are GORDON and ASHBURNHAM to the west of Wellington County; MONTEAGLE to the west of Bathurst; HARDEN and CLARENDON north of the Murrumbidgee; COWLEY to the east, and BUCCLEUCH and WYN-YARD to the west of the Murrumbidgee headwaters; SELWYN and GOULBURN north of the Hume or Murray.

The township of Gundagai, at the junction of the Adelong and Murrumbidgee, 240 miles south west of Sydney, is in Clarendon. Tumut, 260, is in Buccleuch. Albany, on the Murray, 360, is in Goulburn. Tarcotta is 280 miles, and Wagga-Wagga, on the Murrumbidgee, 300 west. Neimur is on the Wakool; Deniliquin, or Woolshed, on the Edward, 500; and Moulamein, at the junction of the Edward and Billebong, 570. Euston, on the Murray, 600, is near Lake Benanee by the western boundary. Moama is on that river at Maiden's Punt.

The new southern counties are—AUCKLAND, by Twofold Bay, 1920 square miles; DAMPIER, north of Auckland, by the sea; WALLACE, 1970 square miles, west of the Maneroo Plains; BERESFORD, between Wallace and Dampier, in Maneroo; and WELLESLEY, on the Victoria boundary, and west of Auckland.

Eden township, north side of Twofold Bay, and Boyd Town, south side, are in Auckland, and 350 from Sydney. Cooma, is in Beresford, 250, and Mount Kosciusko and the Murrumbidgee sources are in Wallace.

The sixteen squatting districts are under the superintendence of Land Commissioners. Those north of lat. 30° are CLARENCE RIVER, MORETON BAY, DARLING DOWNS, WIDE BAY, BURNETT RIVER, PORT CURTIS, LEICHHARDT, and the MARANOA. BLIGH squatting district contains 6 millions of square miles, CLARENCE RIVER 5, LIVERPOOL PLAINS 10, MURRUMBIDGEE 12, NEW ENGLAND 5, WELLINGTON 10, DARLING DOWNS 8, LACHLAN 10, McLEAY 2, MORETON BAY 2. The other districts are the ALBERT, GWYDIR, and LOWER DARLING. New England, north of the Liverpool Ranges, is 120 miles long by 100 broad. Beyond the northern line is Clinton County, with Gladstone Township at Port Curtis.

Sydney, the capital of New South Wales, in lat. 33 $\frac{3}{4}$ ° S, long. 150 $\frac{1}{4}$ ° E., has a population of 70,000. It is situated on the southern shore of Port Jackson, in the county of Cumberland.

The other chief towns in Cumberland are Paramatta, 15 miles west of Sydney; Liverpool on the George, 20; Vinegar Hill, 27; Campbelltown, 30 south; Appin, 40 south. The following are on the Hawkesbury river; Castlereagh, 30; Windsor, 35; Penrith, 33; Richmond, 40; Wilberforce, 45; and Pitt Town, 48.

Of the townships to the south of Sydney.

Wollongong of Illawarra, 65, Mittagong, 70, Berrima, 75, and Bong Bong, 80, are in Camden county. In St. Vincent's are Huskisson of Jervis Bay, 120; Ulladulla, 140; Braidwood, 170; and Araluen near Braidwood. Marulan, 115, Bungonia, 125, and Goulburn on the Wollondilly, 120, are in Argyle. Yass, near the Murrumbidgee, 170 to south-west, and Queenbeyan, are in Murray.

Of the townships to the westward, Hartley of Vale of Clywd, 80 miles from Sydney, is in Cook county. Carcoar, 140; Bathurst, on the Macquarie, 120; and Ophir of Summerhill Creek, 150, are in Bathurst. Sofala, 120, on the Turon; and Kelso Town, are in Roxburgh. O'Connell, 120, is in Westmoreland. Tarshish on the Abercrombie, is in Georgiana. Molong, 160; Mudgee on the Cudgegong, 150; and Wellington, 230, at the junction of the Cudgegong and the Macquarie, are in Wellington county. Orange is 160 W.

Of the townships to the north, Singleton, Maitland, and Morpeth on the Hunter; and Newcastle at Port Hunter, 100, are in Northumberland. Jerry's Plains are in Hunter. Casilis, on the Goulburn, 160, is in Bligh. Scone, 160, and Murrurundi, 200, on the Page, are in Brisbane. Paterson on the Paterson, 130; Dungog, 150; and Clarence Town on the Williams, are in Durham. Carrington on Port Stephens, 100 by land, 200 by water; Raymond Terrace on the Hunter; and Stroud, 120, are in Gloucester. Kempsey on the McLeay, Mariaville, and Port Macquarie on the Hastings, 200, are in Macquarie.

Captain Cook discovered the coast of New

South Wales, April 18th, 1770. Captain Phillip founded a penal colony at Sydney, February 7th, 1788. He arrived at Botany Bay, January 18th, with 800 prisoners and 200 soldiers. In 1810, the population was 4000 free and 4000 bond; in 1833, 60,000; 1853, 230,000; 1855, 300,000.

Mr. Bass discovered the strait in 1798. The Blue Mountains were crossed in 1813. Oxley surveyed the Moreton Bay country in 1823. Captain Sturt discovered the Darling 1829, and rowed down the Murray in 1830. Sir Thomas Mitchell discovered the Peel country in 1831, the Bogan in 1835, and passed through the Lachlan marshes across Australia Felix in 1836.

The great gold discovery took place in 1851. Mr. Hargraves observed the site of the first gold field, February 12th. It was in the valley of the Macquarie at Summerhill Creek. Gold has since been found in most mountain valleys of the colony, from Maneroo on the south to Wide Bay on the north.

New South Wales is a British colony, governed by an Executive and a Legislative Council, under the superintendence of a Governor appointed by the Queen. The exports of wool, gold, &c., in 1854, realized £4,050,126, and the imports were £5,981,063. The estimated revenue for 1855 is £1,650,000. There are 8,250,000 sheep, and 1,750,000 horn cattle.

The several governors of the colony and the dates of their arrival are as follows:—Captain Phillip, 1788; Captain Hunter, 1795; Captain King, 1800; Captain Bligh, 1806; General *Lachlan Macquarie*, 1810; General Sir Thomas

Brisbane, 1821; General Darling, 1825; General Sir Richard Bourke, 1831; Sir George Gipps, 1838; Sir Charles Fitzroy, 1846: Sir William Denison, 1855. The Governor of New South Wales is Governor General of the Australian Colonies.

The mineral products of New South Wales. are gold, iron, lead, copper and coal. There are about eight millions of sheep, and nearly two millions of cattle. All fruits, English and tropical, grow luxuriantly. The climate varies according to latitude and elevation; it can, therefore, suit all constitutions.

The Natural History of the colony, like to the other parts of Australia, differs from the rest of the world. Almost all the animals are marsupial or pouch bearing. The trees are evergreen, and most shed their bark instead of leaves. The mountain ranges are of slate, granite and basalt. The plains are of recent sandstone and limestone.

DISCOVERY AND HISTORY OF NEW SOUTH WALES.

Although the Dutch and English were acquainted with portions of the northern and western coasts of Australia, yet until the time of Captain Cook nothing was known of the eastern side. That navigator had sailed round the New Zealand Isles, and, steering to the eastward, fell in with land by accident, April 18, 1770, to the west of Cape Howe, the southern extremity of New South Wales. It was called Hick's Point from the Lieutenant who saw it first. Ten days after the voyagers entered Botany Bay, so named from the variety and beauty of plants found on

the shore by Mr. Solander, the naturalist of the expedition. Two natives there dared to oppose the landing of forty Englishmen. Cook passed the opening of Port Jackson on Sunday, May 6, mistaking it for a boat harbour only. Pursuing his course northward he named successive portions of the coast after distinguished individuals, as the Dukes of Northumberland and Cumberland, Princess Charlotte, and Lords Rockingham, Cleveland, Shelburne and Grenville. After Break Sea Spit he entered smooth water, sheltered by the coral wall of the Barrier Reef. Striking on the coral, his ship *Endeavour* had to refit in Endeavour Inlet. His conduct to the natives was prudent and kind. Though he saw no fields, yet he declared it impossible for the natives to find subsistence at all seasons without cultivation. Taking possession of the whole country up to Cape York, he called it New South Wales.

Through the recommendation of Captain Cook, the English Government determined to establish a Penal colony at Botany Bay. On January 18th, 1788, Captain Arthur Phillip arrived there in the *Supply* and *Sirius*, with 212 soldiers, 558 male prisoners, 228 female prisoners, 28 wives, and 17 children. The French navigator La Perouse entered soon after. Disliking the place from its swamps and open beach, Phillip examined Port Jackson in a boat, and afterwards sent for the ships round. He selected a site for a township, called after Lord Sydney of the Admiralty. This was on the 22nd, though the government was not established till February 7, when the colony was declared to extend from Cape York to Cape Howe, and from the sea to the 135° east longitude. Subsequently the limits were fixed at 26° north latitude, and 141° east longitude. The public stock consisted of two bulls, four cows, and seven horses. The first huts were constructed of the cabbage palm. Owing to the loss of the Guardian store ship, the infant settlements were soon in want of food. At one period the weekly rations of men were only two lbs. of flour, two of salt pork, and two of rice. Many from weakness were unable to work, and one-half were under medical treatment. Men laboured with little more dress than the natives. Even after relief in 1792

flour was 1s. per lb., sugar 2s. 6d., soap 2s. 6d., and tea 20s. A sovereign was paid for a cup and saucer, and rum was £10 a gallon. To relieve the colony a number of the convicts were sent to Norfolk Island, in 1790. There, in the famine, they were saved by a number of birds, which thronged the island for several weeks, and were easily caught. They were called Providence birds.

Some of the prisoners made their escape from the Camp with the view of reaching China, which they imagined close at hand. An old woman caused a small rebellion by prophesying the arrival of the French to set them free. A number of Irishmen rose against the authorities, and gave battle at Vinegar Hill, 20 miles from Sydney, in 1804. But the greatest trouble to the colony was intemperance. Rum was the genius of the place. Things were valued by gallons of rum, instead of sovereigns. All parties trafficked in it. Prisoner women were hired by traders to hawk about the spirits. A gaol was erected from a tax on rum. A party built the hospital upon an agreement to have a rum monopoly for four years. The Government for years purchased the crops of settlers, by a payment in rum. The great difficulties in the Government of so bad a place led to the resignation of Governors Phillip and Hunter. The introduction of free labour was an advantage to the settlement. Grants of land were made subject to quit rents of 2s. a year for every hundred acres. In 1822 the settler was required in lieu of his rent to keep a convict labourer. In 1824, the quit rent of 5s. was levied, with the reservation of all metals. In 1831 lands were to be sold at 5s. an acre, in 1838 at 12s., in 1842 at 20s. In 1825 the Australian Agricultural Company of English capitalists received a grant of one million acres; of these, 437,000 are near Port Stephen, 250,000 on Liverpool plains, and 313,000 on the Peel River. Religion and morals received little attention in those early days; the settlement was five years without a place of worship. The first Church cost £40, and was erected at the expense of the Chaplain. The first newspaper, the Sydney Gazette, was established Feb. 5, 1803. Agriculture was pursued at Rose Hill or Paramatta, and the Hawkesbury river. The flood of that

stream, in 1806, caused a famine; wheat was £6 a bushel. Merino sheep were introduced by Macarthur in 1797, as a cross with the Cape and Bengal breeds of the colony. He got some Spanish sheep from the farm of George III. Sheep increased to 26,000 in 1810; to 120,000 in 1821; to five millions in 1838; and to twelve millions, (including Port Phillip), in 1849. The export of wool was 70,000 lbs., in 1819; thirty years after, 400 times that quantity. The population in 1810, was 4290 free, and 4000 bond; in 1821, 16,000 free, and 14,000 bond. In 1833, the number was, 60,000; in 1840, 129,000; in 1842, 150,000; in 1844, 173,000; in 1846, 197,000; in 1848, 220,000; in 1852, 208,000; in 1853, 230,000; in 1855, 280,000. In the bad year of 1843, only eleven government emigrants arrived. The drought of 1827-8, and-9, caused great distress. The opening of the western country in 1813, by the discovery of a passage across the Blue Mountains, was of very considerable benefit. A colonial rebellion took place in 1808. Governor Bligh was opposed by the soldiers, officers, and merchants of Sydney. He had stopped their monopoly of trade, and had certainly been otherwise harsh in his government. He was arrested and placed on board a ship, and the Colonel nominated governor in his stead, till the arrival of General Macquarie, in 1810. Macquarie took a warm interest in the progress of the colony. The several governors of New South Wales have been Captain Phillip, 1788; Captain Hunter, 1795; Captain King, 1800; General Lachlan Macquarie, 1810; General Sir Thomas Brisbane, 1821; General Darling, 1825; General Sir Richard Bourke, 1831; Sir George Gipps, 1838; Sir Charles Fitzroy, 1846; Sir William Denison, 1855. The acting governors of the colony were Major Grose and Captain Patterson, from 1792 to 1795; the officers of the New South Wales Corps, from Bligh's deposition to Macquarie's coming; Colonel Snodgrass, for three months before Governor Gipps' arrival; and Sir M. C. O'Connell for two weeks after Governor Gipps left Sydney.

The gold discovery gave an immense impetus to the prosperity of New South Wales. As early as 1841 the

Rev. W. B. Clarke found gold in the valley of the river Macquarie. A shepherd, named McGregor, brought some from the Bathurst direction to Sydney. Mr. Smith of the Berrima iron works, offered for a reward to show to government the situation of a gold field. But Mr. E. H. Hargraves on February 12th, 1851, discovered a remarkable auriferous region. Found first at Ophir, Summerhill Creek, near the Macquarie, the gold was soon known to be spread over a large extent of the territory. Wherever the slate and quartz occur there the mineral is obtained. The rocks toward the southern boundary, the western country beyond the Blue Mountains, the sources of the western waters, the northern dividing ranges, even to the Wide Bay district, in latitude 26°, are auriferous districts. Though eclipsed in glory by the superior yield of the mines of Victoria, the mother colony of New South Wales has greatly progressed since the gold discoveries.

After the settlement of Port Jackson, considerable energy was displayed by Governors Phillip, Hunter, and King in the discovery and settlement of other places. Captain Paterson found a river in 1793, and named it after Major Grose. The Cowpastures were entered in 1796, Captain Phillip called the river Hawkesbury after an English lord. Lieutenant Shortland sailed into Port Hunter in 1797. Mr. Bass, surgeon of the "Reliance" accompanied by Lieutenant Flinders in a small boat, discovered Twofold Bay and Bass's Straits, in 1798. Flinders in the Norfolk schooner surveyed Moreton Bay, July 8, 1799, although previously known to Cook. The schooner also visited Port Curtis, Shoal Bay, and the Coal river or Hunter. In 1813, after repeated attempts, Messrs. Wentworth, Lawson, and Blaxland succeeded in penetrating the dense scrub, scaling the Blue Mountains, and revealing the fertile Bathurst country beyond. Mr. Evans discovered the Lachlan or Colare in 1815. In the same year Governor Macquarie named Cox river and the Vale of Clwyd. In 1817, Surveyor General Oxley traced the Lachlan through a heartless country to an immense *marsh, which he concluded to be the edge of a vast inland sea.* His men suffered much and had a weekly ration

allowed of only two quarts of flour each. Striking off to the north east in search of the Macquarie river, he discovered the Wellington Valley, on August 19th, and named the Bell River after a major. In May, 1818, he followed up the Macquarie till it terminated also in a vast swamp, which he believed to be part of the same inland sea he beheld on the Lachlan. Travelling then to the east, he entered upon the Liverpool plains, and passed over the Castlereagh and the Peel rivers. Crossing the range, Oxley came to the Apsley and Hastings rivers, with their wonderful cataracts of 200 and 250 feet. He gained Port Macquarie in October. In 1823, Mr. Oxley took his third tour from Moreton Bay, and fell in with the Tweed and the Boyne. Two shipwrecked cedar cutters gave him information of a fine river, which he visited and named after Governor Brisbane. The stream was afterwards explored by Major Lockyer.

Mr. Mehan, in 1818, saw Bathurst Lake and Goulburn Plains. Bathurst, Goulburn, Liverpool, Castlereagh and Peel were British statesmen of the time. Mr. Throsby first made known the south country in 1819, and Captain Currie, the Maneroo or Brisbane plains in 1823. Messrs. Hume and Hovell in 1824, in their extraordinary overland trip to Port Phillip, discovered the Yass Plains, the Murrumbidgee, and the Hume, or upper waters of the Murray. Upon the death of Oxley, and in accordance with his dying request, Mr. Allan Cunningham, the Botanist, continued the northern exploring. In 1825 he went over the Liverpool range through Pandora's Pass. In April 1827, he discovered the Gwydir River and the Darling Downs. He crossed the north dividing range by a pass near Mount Mitchell, being attacked by a party of natives, who set light to the long grass in the midst of a hot wind. The pass over the Blue mountains by Mount Victoria was known in 1823. Captain Sturt, of a regiment then in Sydney, obtained leave to conduct an expedition, accompanied by Mr. Hume, two soldiers and eight convicts. They started Nov. 10, 1828. They reached Mount Harris, and learned that two Irish absconders had there been killed and eaten by the blacks. They passed through Mr. Oxley's inland

sea at the marshes of the Macquarie, and followed it northward to lat. $29\frac{1}{2}^{\circ}$ where a junction took place with a large river tending to the south-west. This, after tracing down for 66 miles, they called the Darling, after the governor. Then falling in with the Castlereagh, they traced that also to the Darling, 90 miles higher up. But at both places the water was salt, obliging them to return. The long drought had diminished the stream, and caused the salt springs to be more observed. The heat on one day was 130° in the shade. A second journey was undertaken by Mr. Sturt on Nov. 3rd, 1829, accompanied by Mr. McLeay. The Murrumbidgee was followed by boat to its junction with a splendid stream, which was named the Murray, after the Secretary of the Colonies. Along this they rowed to the sea, through Lake Victoria. For farther particulars of that exploration, the reader is referred to the history of South Australia. Sturt was then, what he ever proved himself to be, the just and benevolent friend of the aborigines.

Major Mitchell, Surveyor-General of New South Wales, commenced his first expedition, November 24th, 1831. A captured bushranger had spoken of a river Kindur running northward to the sea, where light coloured people came to trade. The Surveyor-General sought for this stream. He followed the Nammoy or Peel to the Karaula, as the natives called it. In February he traced the Gwydir to the same river. This was the Darling. In March 1833, he went on his second route with Mr. Cunningham, the botanist, and twenty men. They reached the Bogan, on the banks of which Cunningham was lost; he was killed by the blacks. Mitchell continued his route along the river to its junction with the Darling. Establishing a stockade for future protection, called Fort Bourke, he followed the main stream for three hundred miles, and then returned by way of the Bogan again. An unfortunate collision with the Darling tribe took place in the absence of the enterprising leader. Piper was the native companion of Major Mitchell. King Peter of the Spitting tribe robbed the Englishman of his handkerchief. *The party fell in with the Puppy, the Begging and*

the Red tribes. Some black fellows kindly came to warn the explorers of the approach of a running bush fire. Major Mitchell's third expedition was the most important and successful of all. He left Sydney with a party of twenty-five, in March, 1836. Proceeding along the dry bed of the Lachlan, where in 1817 Mr. Oxley had retired before the vast spreading inland sea, he came to the grassy banks of the flowing Murrumbidgee. Crossing thence to the Murray, and looking at the junction of that river with the Darling, he left these noble waters, and entered upon the plains of Port Phillip, his most splendid discovery. Particulars of this interesting journey will be found in the history of Victoria. Major Mitchell's black Barney was sent back because of his desire to fire upon a tribe in order to procure a wife. An interesting child, Ballandella, was afterwards brought up in Sydney. Her widowed mother on her homeward route married Joey, king of the Murrumbidgee. In his last expedition in 1846, Sir Thomas Mitchell unravelled the network of rivers north of the Darling, discovering the Balonne, the Warrego, the Maranoa and the Victoria rivers, with Mount Abundance and the beautiful Fitzroy Downs, on his successful journey into North Australia. Much good land was thus added to the known territory of New South Wales.

Frazer's Island was named after the captain of the ship "Stirling Castle," there shipwrecked in 1831. The splendid river Clarence was first discovered by some sawyers in 1838, and examined by Mr. Surveyor Perry in 1839. Like the other rivers on that coast it has a bar at its mouth. Mr. Dixon in 1838 made a survey across the Macquarie and the Bogan. The Richmond river and the Tweed were examined by Captain Rous of H. M. S. *Rainbow*, in 1828. The Bellengen was discovered by some sawyers in 1841. The Australian Alps were traversed by a scientific Pole, Count Strzelecki, in 1840, accompanied by Messrs. Macarthur and Riley. He ascended Mount Kosciusko, 6500 feet, and named it after the great hero of Polish story, and to whose burial tumulus at Cracow, this hill bears some resemblance. *Strzelecki* passed along the rugged mountain chain into

the Port Phillip district of Gipps' Land, which he so designated after the Governor of New South Wales. Particulars of the routes of Sir Thomas Mitchell and Dr. Leichhardt over the northern boundary of the colony, will be found under the head of North Australia.

GEOLOGY OF NEW SOUTH WALES.

The physical geography of New South Wales is unlike that of the other colonies. It is not uniformly hilly like Tasmania, nor a waterless plain like the major part of South Australia. An elevated ridge with numerous spurs passes through the eastern side, enclosing a narrow belt of land between it and the sea coast range, in which country most of the settlements are situated. To the westward is an enormous plain, with few rises, traversed by a few long skeleton rivers. This part and the neighbourhood of Sydney are of a sandy character. Many plains among the mountains, as Liverpool Plains, Darling Downs, &c., are very productive, being of black tenacious mud, the result of the decomposition of basalt and greenstone rocks. Districts covered with the detritus of granite and quartz walls are sandy and barren. The slate country is wooded, but poor. Moreton Bay, New England, and the Maneroo districts are trappean, and therefore fertile. The Illawarra valley, fifty miles long by five broad, is a realm of tropical beauty and luxuriance, being sheltered by precipitous mountains. The valley of the Grose is densely scrubby; its perpendicular sides are 1500 feet high. New South Wales is getting more sterile to the west. Year after year immense quantities of sand are carried from the west flanks of the Cordillera towards the Darling, which are gradually blocking up the streams. This valley must have once been higher, if we may judge from the furrowed tops of the neighbouring sandstone mounds, which were hardened by porphyritic veins. It is highly probable that New Holland extended much more towards the eastward. The total dissimilarity of the animals and

flora of Australia and New Zealand, however, forbids the belief of any close proximity of the two islands. New Holland has evidently lost ground on the eastward since the coralline age.

Commencing at Sydney, as a centre, we observe an extensive sandstone formation of some 10,000 square miles, extending southward towards the Mittagong range, westward to the Blue mountains, and eastward to the sea, with a thickness of about 1500 feet. Coal, which crops out above Wollongong, doubtless runs beneath this recent sandstone, which contains traces of plants. Fragments of granite with large plates of mica are found in it near Sydney; and boulders of porphyry, &c., occur at Parramatta, and between Sydney and Campbelltown. At Port Hacking the sandstone forms fine terraces. Port Jackson cliffs are 200 feet high. The Illawarra limestone, surrounded by basalt and granite, contains fossil wood, and pecten, terebratula, and spirifer shells. The basalt of Bong Bong and the iron of Berrima are in the Mittagong country. Near the Fitzroy iron mine of Berrima are good seams of bituminous coal resting on slate; but no limestone is within twenty miles. The Araluen valley is between walls of hornblende granite. The Shoalhaven limestone has veins of calcareous spar; the Wollondilly fossiliferous limestone lies on greenstone; the Marulan limestone is transmuted into marble by contact with trap; the perpendicular limestone of Bungonia is traversed by veins of auriferous rocks; and the Vincent marble stands upon quartz conglomerate.

South of the Mittagong range we approach the wonderful plateau region of the Maneroo, bounded by the Australian Alps and the coast range. The base of the Maneroo Plains, as elsewhere, is of slate; but the irruptions and transmutations of the so-called igneous rocks are highly interesting; greenstone, granite, basalt, quartz and slate appear in endless variety of forms, according to the fantastic course of chemical agents. Broad bands of Silurian fossiliferous limestone run in quartz, and occasionally the slate in conjunction with that limestone is seen with fossils also. Here abound gold, silver, copper,

lead and iron. There is lignite on the McLoughlan river, and silicified coniferous trees are noticed in trap detritus. On the Delegete twenty-four alternations of fossil limestone with slate occur in a thickness of seven feet. The Delegete mountains are of slate. In several parts the granite is auriferous. Some quartz rocks in Maneroo have a polish, which is thought to have arisen from the action of glaciers. Soda springs are not uncommon. Naas valley is at an elevation of 3000 feet, is forty miles long, and is so situated as to have always a north or a south wind passing through. The sources of the Murray and Tumut are among slate, quartz, and granite ranges. The top of Kosciusko is of sienitic granite. Auckland County, between Maneroo and the sea, is of similar formation to the highlands. The range separating the Towamba from the Genoa is of granite, with quartzose and trappean veins, each containing epidote. The passes of the Auckland chains are vulgarly significant in name; as, Hell hole, Devil-hole, Coal-hole, Purgatory, &c. The distances between the lines of river courses are similar to those of Maneroo. The slate on approaching the coast assumes a purple or red colour. At the mouth of the Pambula a sandstone older than that of Sydney rests upon a red slate. The same slate with veins of porphyry may be shown at Eden of Twofold Bay. At Boyd Town and at Cape Howe is a good building freestone. Copper was picked up on Mount Inlay. A silicious fluid seems to have coated some of the southern rocks.

The Blue Mountains are of slate, with frequent fields of granite and basaltic trap. The earliest gold tracts are in that locality. The auriferous bands are 100 miles across. In the lovely vale of Clwyd, 80 miles west of Sydney, are slate and porphyry. The coal of the neighbouring Hassan Sandstone Walls is bituminous. Sir T. L. Mitchell's noble western road passes hence over the crest of Mount Victoria. The granite commences at Hartley, and extends beyond Bathurst. The precipitous sandstone side of the Grose is 1500 feet deep. Iron abounds, as usual, in the gold region; a cataract of sixty feet falls over an iron wall. Manganese is known at the

Bell river. Copper is wrought to advantage at Ophir, Coombing, and Carcoar. At the Cornish settlement the ore is pyrites, and at Coombing red oxide and carbonate in green slate. The sonorous clinkstone is seen at Ben Bulleen near Sofala; fossil limestone at Belubula; mica slate at Mount Everndon; pink granite at Molong; freestone and granite detritus at Dubbo; porcelain clay on the King's Plains; and trap in the Mullion range.

Near Coombing are the Abercrombie caves, 200 feet long, 40 broad, and 80 high. At Burran Gilong Creek, Bathurst district, is a stalactitic limestone tunnel 700 feet long. The entrance is 130 feet wide, and the exit 120. In some parts it is 100 feet high. In the excavations is a splendid hall of alabaster. In the Molong caves are fossil marsupial bones in calcareous concretions. A mass of native copper weighing 110 lbs was discovered at Molong. The western Wellington breccia and stalactitic caverns have a floor of red dust, in which are many broken fossils. This red dust is of carbonate and phosphate of lime with some animal matter. The floor gives evidence of two submersions beneath the sea. Of fourteen species of animals there revealed, only four are now existing. Beside the Seal, there were varieties of the Opossum, Bandicoot, and Kangaroo families, of far greater size than we now have. The Diprotodon was like the Wombat with teeth of the Kangaroo. The Notatherium, or South beast, had teeth similar to the Elephant's, with molars increasing in size towards the back; the jaw is eleven inches long. Both animals were pachydermal or thick-skinned kinds of marsupialia. Similar fossils have been exhibited at the Turon, and in Moreton Bay district. Leichhardt found monster fossils not far from the Darling. Wellington valley is gravelly and sandy, with irruptions of basalt. Gold is found along much of the course of the Macquarie. On its banks slates are seen converted into pitchstones and jasper. For five miles the Bell is lined with porphyry, then succeeded by a conglomerate of limestone and slate cemented by basalt. Canobolas or "Old Man Mountain," is surrounded by slate. On the plains west of this hill is a limestone with turbinated shells.

The crystalline sandstone Gibraltar Rock is near Dubbo, on the Macquarie. The head waters of the Lachlan and the Murrumbidgee pass through primitive rock; they afterwards flow through a country of sandstone and Murray tertiary limestone. Serpentine and porphyry ranges divide the tributaries of the Murrumbidgee from those of the Lachlan. Gold bearing quartz and granite extend southward to the Murray at Albury. The Tumut district is of the tertiary limestone, with occasional inroads of basalt. In the great sandstone plain towards and beyond the Darling are isolated ranges of sandstone rocks, elevated and transmutated by basalt, quartz and porphyry. In some the quartz predominates; as, those of Dunlop, D'Urban, Bogan, New Year's Range, and Oxley's Table Land. The Greenough and McCulloch's ranges are silicious formations. The porphyry prevails at Mount Harris by the Macquarie. Near Fort Bourke on the Darling is a sort of inflammable pitch.

Between Sydney and the Liverpool range is the great carboniferous system, which is, in fact, interrupted by that range. The valley of the Hunter is the chief seat of bituminous coal. The mineral was observed to crop out at the mouth of the river, and convicts were sent to work it as early as 1804. The Newcastle mine was subsequently held by the Australian Agricultural Company. In 1855 the coal district was leased in small fields, subject to an annual rental, and a royalty upon each ton raised. The chief coal deposits in that quarter are at Newcastle and Morpeth, and by the William, Paterson, Karua, and Goulburn rivers. On the Karua at Port Stephens a seam is known of above thirty feet thickness. In a Hunter pit of 200 feet the following strata were penetrated: conglomerate 23 feet, coal 3, grit 44, coal 5, clayrock 43, coal 5, sandstone 50, coal 3. The presence of ferns and the *Lepidodendron* fossil wood, proves the coal to be of the true European character, according to the Rev. W. B. Clarke, though much of the fossil flora differs from the home fields. Other geologists, as Professor McCoy, doubt the existence of the *Lepidodendron*, and declare the coal to be of the more recent Oolitic age. Mr. Stutchbury

thinks that the New South Wales coal is very ancient, as the limestone fossils beneath are of the earliest kind. Of ninety fossil species in the Hunter coal, half are new, fifteen are of zoophyta and five crustacea. According to the Rev. W. B. Clarke, the Newcastle field is the western side of the great geological basin, the main part of which is now beneath the ocean. Crossing the Blue Mountains from the Hunter valley, a similar formation is found on the western side of Talbrager creek, where the coal is on slate under sandstone and very rich hæmatite iron ore. A five feet seam of cannel coal is under twenty feet sandstone and 200 conglomerate. The sandstone is full of the leaves of the Glossopteri, with neighbouring beds of magnesite or meerschaum. The Bothero sandstone in the same Bligh district abounds in caverns with plenty of salt. Gloucester county is carboniferous upon slate. At the Macquarie is an imperfect coal with stumps of trees in conglomerate. The British coal field is 12,000 square miles in extent, producing forty million tons a year; the French field is 2000 square miles, producing four million; the United States is 100,000 square miles, yielding five million tons. The extent of that in New South Wales is unknown. It may probably be found beneath the great sandstone country of the Darling. In 1849 there were 48,000 tons raised; in 1854, 116,640 tons.

Many silicified trees in an upright position are seen at the source of the Hunter. Volcanic grit occasionally is gathered on the right bank of that river. In several places granite crops out in the carboniferous valley. Near the head of the Hunter, under the Liverpool chain, is the ever-smoking Mount Wingen. The base is of quartzose conglomerate, and the top slate with porphyry. There are agates coated with iron and copper. The burning part is at an elevation of 1500 feet. Sulphurous and steamy vapours, and often brilliant flame, ascend through deep chasms; blasts are sometimes heard. On the edge of the cliffs are efflorescent sulphur, crystal, and bitumen. There is no lava. In the spirifer limestone over the burning portion are impressions of ferns, lepidodendron, &c. The white hot sandstone contains the terebratula and

other shells. Similar sulphurous flames were noticed issuing from a cliff four miles from Newcastle, which burnt from 1828 to 1830. At Port Stephen's seven sorts of porphyry occur in one mass. On the Myall river trap issues through the slate. Fossiliferous slaty limestone forms the floor of Macquarie county. There are belts of limestone fine as Parian marble, which are partly fossiliferous. In Gloucester are curious stone cannon balls with a flinty crust. The Liverpool and Warrumbungle Mountains are of basalt and granite.

North of the Liverpool range, the Dividing chain extends to a north north easterly direction, consisting principally of granite. Towards the Bellengen the hills are of mica, slate and porphyry. From Bolivia to Tenterfield, and thence toward Maryland the range is granite with intrusive basalt; and thence to Warwick is clayslate and granite. From Warwick to Drayton are a ferruginous conglomerate sandstone and porphyritic scoria; and from Drayton to Mount Brisbane by Ipswich are crystalline sandstone and metamorphic slate. The red and grey granites prevail in the chain north of the Severn river, and slate to the north west of it. North of Moreton Bay the Dividing chain narrows and approaches the sea coast, becoming more quartzose and slatiform. On the Boyne and near Wide Bay gold is obtained. As both sides of the Dividing range are of similar formation, the intrusive and more recent character of the mountains becomes apparent. It rose gradually dislocating the country east and west. Some have thought the chain was formerly much higher. Most of its peaks in New England have a granite base, and greenstone or basalt top. Mount Lindsay has an apex of castellated trachyte. At the source of the Peel and Apsley the slate is pierced by the basalt, and several basaltic hills are alongside of the Apsley. The Hanging Rock near Tamworth is of granite, greenstone and porphyry; and at its base are trap, quartz and gold. Rocking stones are near Tamworth. The valley of the Peel tributaries, north of Liverpool range, is carboniferous like the Hunter valley on the other side. The Hanging Rock rose subsequently to those coal series. The Liver-

pool Plains, 1000 feet above the sea level, are of blackish soil from decomposed trappean basalt; the substratum is of chlorite slate. These plains are without water in summer; fossils of existing and of extinct animals have been found in the soil. Rubies and topazes are gathered from the sands of the Castlereagh. Mud craters are declared by Mr. Stutchbury to be seen in Keewang creek. The Gwydir and Nundawar ranges, are of basalt, serpentine, and porphyritic clinkstone. Good cannel coal rests on porphyry in conglomerate in the Gwydir district. An auriferous serpentine table land is south of Bingera on the Gwydir. A limestone beside that stream contains traces of coral, turbo shells and encrinurite stems. The upper Condamine is a country of quartz and basalt. Lower down by Dogwood creek it exhibits much fossil wood and agate, and at Oaky creek a sort of tufa. Slate is abundant between the Condamine and the McIntyre and Severn rivers. A granite table land runs eastward of the Severn head waters. Sandstone forms the stratum of the flat land towards the Murray.

On the north eastern side the geological features are similar to the western, though of smaller dimensions. Bernard river flows through a quartzose gold region. The Hastings tributary, Wilson's creek, has quartz with arsenical pyrites, which has been mistaken for silver. Port Macquarie rock is quartz and serpentine. The McLeay river rises in greenstone, passes the sienite of Armidale, falls over slate precipices 250 feet in depth, and flows through an auriferous country near its mouth. Trap and pink granite are at Smoky Cape and Trial Bay. The Solitary Isles and neighbouring coast are of chlorite and quartzose slate. High rocks of mica slate flank the Bellenger river. The Clarence, rising from the trappean Mount Lindesay, passes through an auriferous and then a carboniferous country. Granite, basalt, and plumbago are on its western branch, the Rocky or Urallo; slate and quartz on the Boyd; and good coal abounds on its last tributary, the Ora Ora. The carboniferous system extends from the sea through Grafton to Tabulam at the junction of the Rocky and Clarence, though with many

interruptions of slate, quartz and granite. It re-appears on the Richmond river, on the flanks of the McPherson range, and, northward of Maryland, on granite in Sydney sandstone 3000 feet high. The Clarence coal measures have fewer ferns than the Newcastle. The coal of Catika is in Sydney sandstone with coniferous wood. It would appear that two irruptions of basalt took place in the Clarence coal valley. Trachytic pebbles are frequent in the Richmond and Clarence coal fields. The Richmond district has much silicious grit, bearing vegetable impressions with veins of quartz; it is rich in granite and old trachyte. Trachytic trap is also abundant at McPherson range, and so on at intervals up to Moreton Bay.

Upon the highlands of New England a quantity of fossil wood is observed, carried there by ancient floods. The New England gold district is eighty miles wide. Its coal district is like that of the Hunter. Tourmaline with oxide of iron ore are noticed at Paradise creek. Plumbago in granite is presented at Dundee. The eastern edge of New England is trap and granite. Between Maryland and Tenterfield lead, silver and antimony are known; and between Tenterfield and Tabulam the rocks are of quartz, serpentine, slate and granite. Meerschaum, or magnesite, occurs in the serpentine with fern leaf impressions. Granite domes are at the head of Quart Pot creek. The gold of New England is often found in granite, especially when disturbed by trappean porphyry. At Tilbuster and on the Rocky creek, sapphires, rubies, &c., abound with the gold washings.

The Moreton Bay district has mineral treasures in gold, coal, and excellent limestone. Gold is obtained from the Dividing range, Canning Downs, &c. The river Brisbane passes felspathic and hornblendic rocks, and then flows through a rich carboniferous district. The coal is on both sides of the stream; and, also, on the Bremer; at the north point of the Bay; and about the limestone country of Ipswich. On the Brémer the beds are alternately coal and fire clay. The Ipswich bituminous seam is six feet thick. Mount Brisbane is of porphyry and red granite; *the same granite extends northward and westward. On*

the north side of Brisbane town are white spar and purple slates. Trachytic lava constitutes the rock of the Glass-houses by the Bay. A spur of quartz comes down to the Pine river; in the serpentine and slate debris of this stream gold is found. Horizontal sandstone occurs at Drayton and at Stanley river, porphyry at Mount Byron, and granite at Durandur.

NORTH AUSTRALIA.

THIS extensive, undivided, and unsettled region extends northward of New South Wales and South Australia, from lat. 26° to Torres Strait and the Gulf of Carpentaria, and eastward of Western Australia from long. 129° E. to the Pacific Ocean. Only a small portion has been visited by Europeans.

Settlements were formed on Melville Island and Coburg Peninsula, on the north coast, but were abandoned. The last at Port Essington was left in 1849. The climate was very unhealthy. Sheep and cattle stations have been formed near the rivers on the New South Wales side, in the line of Mitchell and Leichhardt's discoveries.

While fertile spots have been found beside rivers and on a few plains, travellers have remarked in North Australia more scrub and desert than good ground. There are no bars to the northern rivers.

The discoverers of North Australia were the Dutch in 1605. Torres, the Spaniard, was in the Strait, bearing his name, in 1605. Tasman also,

and other Dutchmen, and Captains King, Flinders and Stokes were discoverers on the northern coast; while Captain Cook in 1770 discovered the whole of the eastern side. The great land explorers have been Sir T. L. Mitchell in 1846, Captain Sturt and Dr. Leichhardt in 1845, and Mr. Kennedy in 1847 and 1848. Sturt discovered the interior Great Desert; Leichhardt, the rivers near the east coast from Moreton Bay to Port Essington; Mitchell, the rivers and plains between the Darling and lat. 22° S.; Kennedy, the lower course of the Victoria, and the scrub of Cape York Peninsula.

RIVERS.

The rivers north of the Darling, and flowing into it, are the tributaries of the Balonne, being the Cogoon and Little Balonne. The Condamine joins from Darling Downs to the east. East of the Balonne are the Yahoo, Sandy and Frederick Creeks. The Fitzroy Downs are about the southern boundary.

The Mantuan Downs, about lat 24° , are the source of several important streams; as, the noble Victoria, running westward and then southward for 700 miles towards Lake Torrens. The Warrego was traced downward from the Mantuan Downs 500 miles, to within 100 of the junction of the Culgoa and Darling.

The Maranoa has a southern course from Mount Owen for 300 miles to its junction with the Balonne. The Nive and Claude, near Lake

Salvator, have short courses. The pretty Salvator flows through Salvator Rosa valley into Lake Salvator. The Nogoia from the Downs runs northward to the Mackenzie. The splendid Belyando, or Cape, proceeds also northward 400 miles from Mount Mudge of Mantuan Downs toward Edgecombe Bay.

The rivers from the Fitzroy and Mantuan Downs to the sea were those observed by Leichhardt. From the Lynd range, latitude $25\frac{1}{2}$, flows the Dawson toward Port Curtis. Then follow the Robinson, or Horsetrack, the Boyd, and Zamia Creek. From the Expedition range the Comet runs northward into the Mackenzie, with a course toward Port Bowen.

The Isaacs is near the Suttor, which joins the Cape or Belyando. The Burdekin, receiving the Perry, was followed to the northwest for 200 miles. The Clarke, and Separation Creek are north again. The Lynd, receiving the Mitchell, flows north-west into York Peninsula.

The rivers of the Gulf of Carpentaria are the Nassau, Staaten, and Van Diemen, to the east; Flinders, Albert, Nicholson, Marlow, Tasman, Calvert, Seven Emu, Robinson and Macarthur, to the south; and Limmenbight and Roper, to the west.

In Arnhem Land, to the north, are the Liverpool, the South Alligator and the Adelaide, into Van Diemen's Gulf; the Fitzmaurice and the Victoria of Stokes into Queen's Channel, latitude 15° , near the north-eastern extremity of North Australia. Large ships have sailed up the

Adelaide, Albert and Victoria for fifty to eighty miles.

Fine Table Land was seen near the Burdekin, 2500 feet high. The Valley of Lagoon is west of that river. The Nonda Country is west of the Lynd. The Albinia Downs are near the Comet. The Plains of Promise are south of the Albert and Great Gulf. At the head of the Alligator is another high Table Land. Sir T. Mitchell named the country about the Gulf, AUSTRALINDIA, and thence to latitude 25° CAPRICORNIA, No rivers are known south-west but Sturt's Eyre Creek, near his northern limit, in latitude $24\frac{1}{2}^{\circ}$ south. No lakes of any size are known. Lake Salvator is in the southern part of the Mantuan Downs.

MOUNTAINS.

No great mountain ranges are known in North Australia. The Fitzroy and Mantuan Downs are elevated. The volcanic cones of Pluto, 2500 feet, Playfair, Salvator and Hutton are south of Mantuan Downs. Near the head of the Maranoa, are King, 2700 feet; Owens, 1800; and Aquarius. Lynd and Expedition ranges are north of Fitzroy Downs. Aldis Peak and Mount Nicholson are in Expedition range. Lindley's range is west, and Buckland's Table Land east of Lake Salvator. Christmas range is between the river Comet and the Mantuan Downs; Coxen range by the Isaacs; and Mount Kennedy on the east side of the Maranoa.

The Peak range, in latitude 23° , is between the

Isaac and the Belyando. Smith, Start and Narrien Mountains, are near the Belyando and Lang, by Separation Creek. Bellenden Ker, Abbott, Dryander, 4500 feet, and Elliott, 4000 feet, are peaks of the eastern coast range. The Collar range is round Gulf Carpentaria. The basaltic Table Land near Port Essington is 4000 feet high.

BAYS.

The Bays on the eastern coast, are Wide Bay, latitude 26° south; then Hervey, Port Curtis, 24° south; Keppel, Port Bowen, Broad Sound, 22° ; Repulse, Edgecumbe, Cleveland, Halifax, 19° ; Rockingham, Trinity, Princess Charlotte, Weymouth, Temple, Shelbourne; Newcastle, by Cape York; and Port Albany, on Albany Island, near Cape York.

On the north side, are the Water Plaets, Limmen Bight and Blue Mud Bay, in the Gulf; Melville, Arnhem and Castlereagh Bays, north-east of Arnhem Land; Mountmorris', Raffles and Port Essington, in Coburg Peninsula; Van Diemen's Gulf, between Melville Island and the main land; Adam Bay at the mouth of Adelaide river; and Anson Bay, Port Keats and Queen's Channel to the north-west.

CAPES.

The Capes of the eastern side, are Sandy and Break Sea Spit, by Hervey Bay; Capricorn, on the tropical line; Townsend, latitude, 22° south;

Palmerston; Sandwich, by Rockingham Bay; Grafton and Tribulation, by Trinity Bay; Flattery, above Endeavour river; Melville, latitude, 14° ; Direction, 13° ; Grenville, by Temple Bay; York the northern extremity.

The northern capes, are Arnhem, Wilberforce, and Wessel, north-east of Arnhem; Don of Coburg peninsula; Hotham, in Van Diemen's Gulf; Van Diemen of Melville island; Ford, by Anson Bay; Hay by Port Keats; and Turtle Point at the western boundary.

ISLANDS.

The islands of the east coast, are Sandy or Fraser, by Wide Bay; Facing, near Port Curtis; Northumberland and Cumberland groups, within the Barrier Reefs; Albany, near Cape York; Wednesday and Prince of Wales in Torres Strait.

The islands to the north, are Groote Eylandt. and the Wellesley and Pellew groups, in the Great Gulf; Melville and Wessel's groups, near Cape Arnhem; Melville and Bathurst, west of Coburg Peninsula; and Peron's Isles in Anson Bay. The grand Coral Barrier Reef, 1200 miles long, is about thirty miles from the eastern coast.

STRAITS.

The straits are Endeavour by Cape York; Torres, between Australia and New Guinea; Brown, by Wessel's Isles; Bowen, by Raffles Bay; Dundas, between Coburg Peninsula and *Melville Island*; Apsley, between Melville and *Bathurst Islands*; and Clarence between Melville *Island and mainland*.

DISCOVERY OF NORTH AUSTRALIA.

Northern Australia was the first portion of this continent sighted by Europeans. The Dutch yacht *Duyfhen* first approached the coast. This was on the east side of the great gulf, in March, 1606. Torres the Spaniard, however, in Sept. 1605, passed by Cape York, and spent two months in the strait. Jans Carstens was sent by the Dutch East India Company to explore North Australia with the *Pera* and *Arnhem* in 1623. He was unfortunately killed by the New Guinea savages. His crew continued the voyage, and observed part of the opposite coast, since called Arnhem Land. They reported that they found shallow water and barren coasts, islands altogether thinly populated by divers cruel, poor, and brutal natives, and of very little use to the company. Another Dutch navigator, named Pool, was murdered in New Guinea, in 1636; but his super-cargo Pieterse sailed 120 miles along the northern coast without seeing signs of inhabitants. Tasman in 1644 surveyed part of the Gulf of Carpentaria, so called in 1628 from Carpenter, the Governor General of the East India Company. The Bay of Van Diemen was entered by three Dutch Ships from Timor in 1705. All these discoveries were made by very small coasting craft. The English were the next discoverers. Captain Cook, in 1770, sailed along the eastern coast of North Australia. He discovered the Barrier Reef, and all the principal bays on the coast. Breaksea Spit is the cape round which he found smooth water. Most of the names of places are after English Noblemen. He took his vessel the *Endeavour* to refit in the Endeavour river or inlet, lat. 15°. Upon Possession Island near Cape York in Aug. 1770, he took possession of the country of New South Wales, in the name of his Sovereign, George III. Flinders went over Cook's track, in 1802, to complete the survey. He discovered and named Port Curtis after an Admiral friend. He then properly surveyed the Gulf of Carpentaria, and noticed the embouchure of several rivers there; one is named after himself. On Chasma's Island, in the Gulf, in

a cave, he saw numbers of rude drawings of men, with dress different from the natives; also kangaroos and other animals. Captain King in the *Mermaid* of eighty tons, ventured among the reefs and rocks of unknown seas. He left Sydney in 1818, and in four voyages, in five years, examined 800 miles of the northern coast. He discovered and named the Alligator and Liverpool rivers, and called the following places after Admirals,—Port Essington, Popham Bay, Port Keats, Mount Cockburn, Bowen Straits. On Clack's Island near Cape Melville, he noticed 150 red ochre figures in a cave. The men were represented with transverse belts. H.M.S. *Beagle* made important discoveries between 1839 and 1842, commanded at first by Capt. Wickham; but it was under the command of Captain Stokes that most success followed the expedition. In 1839, the Victoria river, near the western boundary of North Australia, was ascended in boats for eighty miles by Stokes, who there got wounded by the natives. The Adelaide, to the south-west of Port Essington, was ascended by him for fifty miles. Captain Stokes afterwards discovered the Albert river; towards the head waters of which he beheld the fertile Plains of Promise. The sailors were much troubled by the mosquitoes of the low mangrove shores. At night, to get a little sleep, they took turns in being tied up in a sack, previously well smoked. In a heavy shower on land, they very carefully stripped and put their clothes in a hollow tree to keep them dry. Captain Blackwood, with Jukes the naturalist, in H. M. S. *Fly*, surveyed Torres Strait for a new passage through the reefs, between 1842 and 1846.

The English have made several unsuccessful attempts to settle North Australia. Hearing that the French intended to form a colony, Sir Gordon Bremer was sent in 1824 to establish the settlement of Dundas on Melville Island. Another location was made by Captain Stirling, on the east side of Raffles Bay, Coburg Peninsula, called Wellington. Continual conflicts with the natives led to the removal of both settlements, with the stores, cattle, &c., in 1829, to Swan river, to form a new colony, called Western Australia. News of the French induced the English

government to send Sir Gordon Bremer in the *Alligator* and *Britomart* men of war, in 1838, to take possession of the whole coast from Cape York westward. A desire to check Malay piracy, and to afford protection to Europeans shipwrecked in the straits, led to the formation of the settlement of Victoria on Port Essington. This from its unhealthiness was soon after abandoned, in November, 1849. Another attempt was made on the north-east coast by Colonel Barney in 1846. After five months trial, and an expenditure of £15,000, this settlement of Gladstone was also abandoned for want of water. Water having since been found, a township has arisen.

Although the coast of North Australia had been surveyed, yet nothing was known of the vast interior. Captain Sturt first penetrated that fiery region, and found it a heartless desert. He saw no inland sea and no dividing range. For the particulars of that journey, the reader is referred to the history of South Australia.

Sir T. L. Mitchell, the fortunate explorer of Australia Felix in 1836, left Sydney in December 6th, 1845, to survey the country north of the Darling. He had a party of thirty, with eight drays, three carts, thirteen horses and 250 sheep. In his progress to that river he suffered much from thirst. For forty miles he sought in vain for water in the river Bogan. The heat killed his kangaroo dogs. After passing the Darling he encountered few hardships. River after river appeared, with a large extent of excellent pasture land. From the Balonne depot he went ahead with ten men and light carts. In June he left the beautiful Maranoa and discovered new realms of fertility. Well might he exclaim, "these beautiful recesses of unpeopled earth could no longer remain unknown." The Claude, the Salvator, the Nogoa, the Nive, the Warrego, the Belyando, the Maranoa, and the Victoria were the principal waters he passed. The last river he expected, from its size and direction, would lead to the Gulf of Carpentaria; or, as he himself observed, "the country is open and well watered for a direct route thereto." They forsook the Victoria, with its perfume of lilies and waving grass, because their provisions were failing. With all his rivers

the traveller complains of contending a whole year with scarcity of water. Observing no extensive or lofty ranges, he beheld lines of volcanic cones. The Claude, from its soft, rich scenery, was named after a French landscape painter; and another picturesque looking stream, was called after the romantic painter Salvator Rosa. The pastoral Mantuan Downs, were named from the Mantuan pastoral poet, Virgil; the Nive from a battle in Spain; Hope's Table Land, after an officer under whom Sir T. Mitchell served in the Peninsula thirty years before.

His assistant in the expedition, Mr. E. B. C. Kennedy, after his superior's return to Sydney, was directed to trace the Victoria in 1847. It turned to the south-west through a bad country, the edge of Sturt's Desert, and was finally lost in the baked channels. But, as the Cooper Creek was left by Captain Sturt only 120 miles southward, and in the line of the Victoria, doubtless they are the same river, which after flowing 1000 miles from Mantuan Downs, is probably lost in Lake Torrens.

The enterprising Kennedy was sent in 1848, to explore York Peninsula. He had a party of twelve. They were provided with twenty-seven horses, 250 sheep, and four tons of flour. They were landed at Rockingham Bay, and were to proceed to Port Albany, near Cape York. For one month they were entangled in scrub and swamps near the coast. For four months more, they struggled over a frightful country, through which they could carry neither their flour nor their sheep. They killed their horses to sustain life. Leaving eight of the party at Weymouth, Kennedy pushed on with the native Jackey Jackey and three others, to gain the ship waiting with stores. An accident obliged him to leave the three whites and hasten on with the aborigine to get medical assistance. The natives beset them at Escape river, December 13, when near Port Albany. Kennedy was mortally wounded by several spears. His last moments are thus described by his faithful servant. "He said, 'Jackey, give me paper and I will write.' I gave him paper and pencil, and he tried to write—and he fell back *and died—and I caught him as he fell back and held him*

—and I then turned myself round and cried. I was crying a good while until I got well.” The good fellow buried his master, and succeeded, faint and wounded, after thirteen days’ struggling with blacks and scrub, in getting to the vessel. The crew hastened to those left at the bay and in the bush. Two living skeletons alone remained; the others had perished from fever and hunger. Governor Fitzroy afterwards presented the faithful Jackey with an engraved silver plate, to be worn on his breast.

Dr. Ludwig Leichhardt, a German naturalist, was also an eminent explorer of North Australia. In 1843 and 1844 he had examined the country between Hunter River and Wide Bay. He afterwards proposed to go across from Sydney to Port Essington, keeping near the sea coast. Sir Thomas Mitchell had invited him to join his party. But while the Surveyor-General awaited a reply from England, the Doctor organized an expedition with the help of public subscription. He was accompanied by Messrs. Roper, Calvert and Gilbert, a prisoner named Phillip Murphy, an Irish lad, and two blacks, Charley and Harry Brown. To those who contributed money or stock toward the expedition, he showed his gratitude by naming rivers after them; as, Isaacs, Mackenzie, Cape, Suttor, Burdekin, Lynd, Macarthur, &c. In their long journey of 1500 miles, the party’s provisions were exhausted, and they fed on opossums, iguanas and birds, until they fell in with wild buffaloes toward the Gulf. When they killed a beast, they dried the flesh in the sun. They were once fifty hours without water. On the Queen’s birth-day they sweetened their tea by putting their last empty sugar bag in the boiling water. Losing three horses in crossing the Roper, they were obliged to leave their botanical collection behind them. Mr. Gilbert was speared by the natives near the river Lynd. They fell in with a beautiful Table land district, and the County of Lagoons between the Lynd and the Burdekin, 2000 feet high. Approaching the Alligator river they found plenty of ducks and geese. When nearing the settlement some natives appeared. Looking at the white strangers, they caused the party much pleasure by calling out in broken English, “Come here—

very good—what's your name." They reached a home at Port Essington, December 17, 1845, and arrived by a vessel at Sydney, March 29, 1846, after being long given up for lost.

Assisted by the Government and private subscription, Leichhardt began a new journey, December, 1846, with a party of eight, and Mr. Daniel Bunce as Naturalist. They were provided with fourteen horses, sixteen mules, ninety sheep, forty cattle and 270 Cashmere goats. The object of this journey was to discover the mountain source of the gulf rivers, to skirt Sturt's Desert, and reach Swan river, Western Australia. This was an unfortunate expedition. The animals were often missing. The weather was unusually wet. Fever and ague constantly hindered their progress, and interfered with the care of their animals. The goats and sheep were totally lost, with most of the cattle and mules. The party subsisted upon sun dried bullock's flesh, with occasional birds, iguanas, snakes, &c. Want of nourishment and medicines prevented their recovering strength. They reached Sturt's Desert near Peak range, but were forced at last, by sickness and weakness, to return. Well might Leichhardt remark, that nothing but a continued chain of misfortunes attended them. Mr. Bunce on the homeward route reaped the benefit of his benevolence and thoughtfulness, in unexpectedly eating of fruits and vegetables springing from his sowing months before. After a few months rest Dr. Leichhardt courageously departed for Swan river. He took with him only three white men, Hentig, Glassen, Jack, a bushman, and Mr. Bunce's Black, Jemmy. He left Darling Downs in March 1848, and has not been heard of since. Mr. Haly went afterwards upon his track, and was told by some native women, that the white men had been murdered. Mr. Bunce marked a good track 800 miles long from the Darling to Mount Abundance. Mr. Gregory, late Surveyor of Western Australia, recently left on his North Australian tour. He proceeds to the Victoria river of Stokes, the Plains of Promise, &c.

GEOLOGY OF NORTH AUSTRALIA.

Little is known of this region beyond the tracks of Mitchell, Leichhardt and Kennedy, and the glances of such navigators as Cook, King, Stokes, &c. Though the coast generally is sterile, the interior, especially near the rivers and in the basaltic plains, contains rich black mould. But drought, the great drawback of Australia, would be the antagonist to the farmer there as in New South Wales.

The Sandstone of the Darling basin is a prominent rock in North Australia. The banks of the Maranoa, the Belyando, the Victoria, the Dawson and the Mackenzie are of sandstone. But the sandstone is of two varieties—crystalline and unaltered sedimentary. The latter is found, as in New South Wales, associated with coal, as evidenced on the Mackenzie and the Maranoa, where there is good bituminous mineral. A tertiary clayey sandstone is the floor of the gulf country. On the Belyando is black soil on red sandstone. Mount Abundance is of a decomposing sandstone, near which fossil *Belemnites* were picked up. Vegetable impressions were seen in the sandstone by Sir Thomas Mitchell. The Mantuan and Fitzroy Downs are of sandstone. The Table Land by the Alligator is a dislocated sandstone. That near Raffles Bay is very hard, but in horizontal beds. Tombstone Creek banks are composed of huge rectangular blocks of sandstone having a considerable dip. Coxen range, by the Isaacs, is of horizontal building sandstone; the Lamia Creek bed of clayey sandstone; and the romantic creek of Ruined Castles is named from its sandstone ridges. There is little doubt that the sandstone and granite of the northern coast, as described by navigators, were but varieties of the same primitive crystalline rock. Of this nature may be the ferruginous sandstone of Port Essington, the hard sandstone of Groote Eylandt in the Gulf, the red sandstone at the mouth of the Adelaide and other northern rivers, and the granite of Melville Island.

Here, as elsewhere in Australia, the secondary formations are sparse and inconsiderable. Fossiliferous limestone

was noticed by Leichhardt on the Burdekin. The shore of the Gulf of Carpentaria is of recent tertiary. It is a low coast of calcareous conglomerate, or breccia, with many fossil shells. Fossil marsupialia were discovered on the river Isaacs. Fossil wood and agate are gathered in the bed of the Claude, Dawson, &c. The eastern coast is altogether crystalline, and chiefly granite. Quartz, and slate with gold, appear at Wide Bay and Port Curtis. Porphyry occurs at Cleveland Bay, mica slate against granite on Endeavour river, red quartzose rock at Cape Palmerston, and granite in dykes at Cape Upstart. Cape York Peninsula is crystalline. The islands near partake of that character, excepting where associated with reefs, being of porphyry, granite and clay slate. Arnhem Land has a slate and granite base. The banks of Stokes' river Victoria are described as slate and altered sandstone. The rock to the east of Port Essington is a quartzose conglomerate. Robey's range is of porphyry; and the Burdekin country is of quartz, granite and slate. Granite is on the Cape, clinkstone on the Suttor, and quartz on the Clarke. Christmas Range is of clinkstone and basalt, the Mackenzie Plains of blue clay with fern leaves, and the Peak Plains of quartzose. The first primitive rock Leichhardt saw after leaving Moreton Bay was on the Suttor.

The volcanic element is very strong in North Australia. There are extensive plains of basalt; as, the Albinia Downs, the Valley of Lagoons, Comet Plains, &c. A basaltic Table Land was traversed by Leichhardt about latitude 18° south. Lines of volcanic cones were beheld by Mitchell; three of these form a triangle, Hutton, King, and Playfair. Hope Table Land, Mounts Macarthur, Owen and Kennedy, and the banks of the Salvator and Perry rivers, are of basalt. Separation Creek was so named by Leichhardt as the division of the slate and basalt ridges. Mount Aquarius near Mount King is amygdaloidal basalt, with much ironstone shot around it. The Peak range is said to be of dolomite, by the basaltic plains. Between the range and the sea, there is sandstone traversed by dykes of trap. The basaltic summits of Aldia,

Nicholson, and Expedition range, pierce through a sandstone country. The same rock in a trappean form presents itself through the slate and granite of the Lynd and the Mitchell. Dykes a mile broad run through the limestone of the Burdekin. Fields of broken basaltic lava are seen near the porphyry junction of the Burdekin and Perry. Hornblendic trap covers the singular conglomerate of Erroob and other islands near Torres Strait. The conglomerate is an earthy matrix, with blocks of black lava, varying in size from a pin's head to that of a man, and also with lumps of white limestone. Similar conglomerate, with volcanic sandstone, may be witnessed in the Murray Islands. Pumice pebbles, but not of a recent kind, have been gathered on raised beaches along the north-eastern coast, for 2,000 miles; they are usually as large as a walnut. No so called Igneous Rock was observed on Leichhardt's track from the Lynd to the Roper. The Burdekin, Clarke, Lynd, Cape, &c., will doubtless prove auriferous districts.

The Great Barrier Coral Reef is a remarkable physical feature. Commencing at Break Sea Spit, in latitude 25° , it extends to latitude 9° , off the coast of New Guinea, a line of 1,250 miles in length. Its distance from the shore varies from ten to one hundred miles, averaging about thirty, and preserving everywhere a similarity to the contiguous coast line. A number of isolated and branch reefs occur between the shore and the Barrier, and beyond. For 350 miles from the Spit there is no opening for a vessel in the reef. The Olinda Passage was discovered by Captain Sinclair, in the Hobart Town ship *Olinda*. The inner route is smooth, but full of shoals. The outer route is north-west to latitude 15° , and then west north-west to 12° , where it expands into a clear track, eighty miles wide. From the shape of the reef it is obvious that it was originally alongside the shore. The depression of the coast converted hills into islands, the slopes of which, as well as those of the shore, have been walled up by the industrious coral insects. As these animals never work above water, nor below the depth of about 250 feet, it is manifest that the reefs are rising. Between the reef and

the shore is a calcareous rock of coral, and detritus of coral and shells, in which rock volcanic pebbles are embedded. The reef is of all varieties;—fringes, barriers, and atolls. Some of these atolls are large and beautiful, with their lagoon of still water between the outer circle and the inner coral home.

WESTERN AUSTRALIA.

WESTERN AUSTRALIA lies between the sea and the 129th degree of east longitude. It contains an area of one million of square miles. Its most northern point, Cape Londonderry, is in latitude 14° ; its southern, West Cape Howe, in latitude 35° . The greatest length is 1300 miles; the breadth 800.

Of this vast territory scarcely anything is known. Even the coast is not surveyed. The interior is thought to be a desert, though an inland sea may exist. Very little of the land known is good for cultivation, or even for pastoral purposes. There are no high ranges, and there is no prominent river.

The settled portion, commonly called the SWAN RIVER SETTLEMENT, is towards the south-west, and is about 400 miles long by 100 broad; with a population of 14,000, chiefly located near Swan river.

MOUNTAINS.

The Darling range of hills runs from north to

south; the peaks are not above a thousand feet in height. The Stirling chain is east and west about sixty miles north of King George's Sound; Toolbrunnup and Koi Kyenneruf, 2,500 feet, are its highest points. A spur of the Darling approaches Cape Leeuwin; Roe's range is another spur by Geographe Bay. Lindesay of Bennett range, near West Cape Howe, is 1200 feet; William, 1700 feet. Leonard, Mitchell, Arrow-smith, Frankland and Rokeby are the principal peaks. Eyre, Ravensthorpe, Brewer, Dundas and Russel ranges are between the Sound and the Australian Bight.

Northward of the settled country, and as continuations of the Darling range, are the chains of Smith, Gairdner, Herschel, Moresby's Flat-topped, and Victoria. Mount Peron is in Gairdner's range, and Wizard and Fairfax are near Champion Bay. The Victoria range is toward Gantheaume Bay, latitude 28° . Stephen's range is in latitude 16° ; Mount Cockburn at the head of Cambridge Gulf; and Waterloo and Trafalgar are near the Glenelg river.

RIVERS.

The Swan, 200 miles long, is the chief river: the Avon and Canning are its tributaries. The Murray, with its branch Hotham, flows into an Inlet, fifty miles south of the Swan mouth. The Blackwood, with its tributary the Chapman, reaches the sea by Cape Leeuwin. The Forth is near Cape Chatham. The Kalgar, or French, and the King flow into King George's Sound; and the Frank-

land and Blackwood into Irwin's Inlet. There are some Salt Rivers to the south-east. Phillip River is east of Doubtful Bay.

North of the settled country are the Moore, Smith, Hill, Arrowsmith, Irwin, Greenough, Chapman, Hutt and Murchison, having short courses to the sea. The Murchison reaches Gantheaume Bay; the Greenough, Champion Bay; and the Gascoigne, Shark's Bay. Fitzroy River runs into Sunday Strait, 18°. Grey's Glenelg is near latitude 16°. The Prince Regent is near the Glenelg, and the Roe flows into York Sound.

LAKES.

There are several Salt Lakes, as Brown, Ellen, &c.

BAYS.

The Southern Bays are Flinders, Irwin, Tor, King George's Sound, Doubtful Island Bay, and the Great Australian Bight. On the South-western side are Geographe Bay; Vasse and Leschenault Inlets, into that Bay; Peel's Inlet, north of the Bay; Melville water and Cockburn Sound, by the mouth of the Swan; Breton Bay, receiving the Moore.

North of the settled country are Jurien Bay; Port Grey, in latitude 29°; Champion Bay; Gantheaume Bay; and Shark's Bay, containing Peron Peninsula, and Hamelin and Freycinet Harbours. Exmouth Bay is east of North-west Cape. Reebuck Bay is east of Dampier Land. Stokes Bay, King's Sound and Hope Inlet are east of Dampier Land.

Collier Bay and Camden Sound are north-east of Stokes Bay. Port George IV and Hanover Bay are near the Prince Regent's river. York and Montague Sounds, Carnot Bay, Admiralty Gulf, and Vansittart Bay are in Tasman Land, about latitude 15°. Cambridge Gulf is the north-east boundary.

CAVES.

The Capes to the South, are West Cape Howe, Nuyt's, D'Entrecasteaux and Leeuwin, which are westward of King George's Sound; and Vancouver, Riche, Knob, Le Grand, Rossiter, Arid, Pasley, Malcolm, Culver and Dover, eastward of it. North of Cape Leeuwin are Capes Hamelin, Freycinet and Naturaliste. Cape Leschenault is by Breton Bay.

North of the settled country are Steep Point to the south, and Cuvier Cape north, of Shark's Bay; Lesuer of Peron Peninsula; Point Gantheaume by Roebuck Bay; Coulomb and Levesque of Dampier Land; Voltaire and Bougainville by Admiralty Gulf; Domett and Dussejour, by Cambridge Gulf.

STRAITS.

Geelvink Channel is near Gantheaume Bay; Naturaliste Channel between Dorre and Dirk Hartog Islands; Geographe Channel, the northern entrance of Shark's Bay; Sunday Strait, between Dampier Land and Tasman Land.

ISLANDS.

The Recherche Archipelago are east of King George's Sound. Garden Island and Rottenest, or rat's nest, are at the north of Swan river. Houtman's Albrolhos are off Port Grey. Dirk Hartog, Bernier and Dorre are in Shark's Bay. The Dampier Archipelago of Rosemary, Barrow, &c., are east of North-west Cape; and the Buccaneer Archipelago are near Sunday Strait. Coronation and Buffon Isles are near Brunswick Bay.

COUNTIES.

The settled part is divided in twenty-six Counties. Those to the north are MELBOURNE, GLENELG, GREY, CARNARVON, TWISS, VICTORIA, DURHAM and LANDSDOWNE. Those to the west, are PERTH, MURRAY, WELLINGTON, SUSSEX and NELSON. Those to the south, are GODERICH, HAY, LANARK, STIRLING, PLANTAGENET and KENT. These to the east are HOWICK, BEACFORT, MINTO and PEEL. Those in the centre, are YORK, GRANTHAM and WICKLOW.

TOWNS.

Perth the capital, on the Swan, in latitude 32° south, and longitude 116° east, has a population of 3000. Freemantle, the port, at the mouth of the Swan, twelve miles from Perth, has 3000. Guildford, seven from Perth, is on the Swan. York, on the Avon, is fifty miles east of Perth. *Toodyay* is at the junction of the Avon and Swan.

Port Gladstone is fifteen miles south of Freemantle. Canning on the Canning, near Peel; and Peel on Peel's Inlet,

On Geographe Bay are Vasse and Bunberry. Bannister, on the William, is in the Interior; Dunsboro' near Cape Naturaliste; and Stirling near Cape Leeuwin. Augusta, at the mouth of the Blackwood, in Flinders Bay, is 200 miles south of Perth. Wyndham is at the head of King George's Sound. Albany, on the west side of the Sound, in latitude 35° , is 250 miles from Perth by land, and 450 by sea; it is 2000 miles west of Melbourne.

The Dutch discovered most of the coast of Western Australia. Hartog came in 1616. Edel, Nuyts, De Witt and Tasman were Dutch explorers; Dampier, King, Vancouver and Grey were English; and Baudin and D'Entrecasteaux were French. The Dutch entered Swan river in 1697; and the English, King George's Sound in 1791. Grey's discoveries about Shark's Bay and the Glenelg River were in 1838.

The Colony was established through private enterprise on June 1st, 1829. Large grants of land were made. A penal settlement was formed at the Sound in 1825; this was withdrawn. The colony now receives British convicts. The several Governors have been, Captain James Stirling, 1829; John Hutt, Esq., 1839; Lieutenant Colonel Clarke, 1846; Captain Charles Fitzgerald, 1848.

The exports of Western Australia, are wool, lead, sandal-wood, and native mahogany. For

the year, 1854, they amounted to £35,350 ; while the imports were £121,000. The public revenue was 39,000 ; and the expenditure £43,000. The colony has 200,000 sheep. and 20,000 cattle.

DISCOVERY AND HISTORY OF WESTERN AUSTRALIA.

The Dutch were the earliest discoverers of Western Australia. Dirk Hartog, in the *Endraght* visited near North West Cape in 1616. The Dutch Captain Edel, in 1619, observed the coast south of Shark's Bay, and the captain of the *Leeuwin* or *Lioness* came to the south-west corner in 1622. The rocks of Houtman's Albrohos were the scene of Houtman's shipwreck, in 1619. The south coast was fallen in with accidentally by the ship *Gulde Zeepaard* or *Good Shepherd*, in 1627, and followed for a thousand miles. As Nuyts was being conveyed in that vessel Dutch ambassador to Japan, the land was called after him. De Witt's Land, east of North-West Cape, was named after the captain of the *Vianen*, in 1628. The coast north-east of that again was explored by the distinguished Tasman, in 1644, after his discovery of Van Diemen's Land and New Zealand. He landed in the Bay now called Carnot. Dampier Land was first observed by the English buccaneer, Dampier, in 1688, and on which he remained for two months. He describes the natives as having bottle noses, full lips, and wide mouths. He was disgusted with them because he could not make them work. In 1696 he visited the coast about Shark's Bay and North-West Cape, in H. M. S. *Roebuck* ; discovering an archipelago where the tide rises nearly forty feet.

William de Vlaming, in the *Geelvink*, discovered Swaanen or Swan River, Rottenest Island, and the settled district, in January, 1696. The river was so called from the number of black swans there. The English Vancouver discovered King George's Sound in September, 1791. He

surveyed much of the southern coast; bad weather prevented him from going further. He called West Cape Howe and Cape Chatham from earls of those names. Though his sailors tried hard to get some black swans, they were such bad shots as to hit none. Admiral Bruni d'Entrecasteaux, in 1792, called at the south-west shore. The French Baudin, in the *Geographe* and *Naturaliste*, in 1802, made an accurate survey of Swan River, and gave names to the following places on the coast, some of which had been known before—Cassini and Depuch Isles, Capes Bougainville and Voltaire, Gantheaume and Leschenault Bays, &c. Depuch, Peron, and Leschenault, were his naturalists. His observations of the north-west coast were at a safe distance. He landed, however, at Dirk Hartog Island, and discovered a pewter plate, on which the Dutchman, in 1616, had written the name of his ship, with these words also:—"Our fleet sails hence, leaving the southern territory for Batavia." Flinders, in 1802, named Port Malcolm and other portions of the coast. Captain King, in 1820-3, made a survey of the shore from North-West Cape for 200 miles, and discovered and named the following places:—Cambridge Gulf, Admiralty Gulf, Prince Regent River, Mounts Waterloo and Trafalgar, Roe River, Sunday Strait, and Mount Cockburn. The mouths of the northern rivers have no bars. At Escape Inlet he was nearly shipwrecked. Hundreds of natives were joyfully expecting the spoil of the whites, and yelled their disappointment when the ship rounded the dangerous rock.

Captain Grey was the chief explorer of Western Australia by land. In 1837-8 he made important discoveries in George IV. and Hanover Bays, latitude 15° N. Travelling inland he discovered Glenelg River and some excellent land. He entered a cave, on the sides of which were many rude drawings of men and animals. The red hand was there; and the figures had bandages on their heads, and garments to their ancles. Being wounded by the blacks he was obliged to retire. He then explored the country of Shark's Bay, observing the Gascoigne

River, and Kolaina, or Deceitful Plains, from the mirage. On his way back to Swan River he was shipwrecked at Gantheaume Bay, and had to walk 300 miles southward, to reach the first settlement. Several rivers, as the Murchison, Hutt, Irwin, Chapman, &c., were passed, and some good country. The party endured much from sickness, hunger, and thirst; and nothing but the courageous spirit of Grey sustained the others. He sought strength from the Scriptures. He very properly observes—"In all my sufferings I never lost the consolation derived from a firm reliance upon the goodness of Providence." One of the party, Mr. Smith, wandered from the rest, and perished from thirst. Falling in at last with some friendly blacks, they were feasted with roast frogs and by-yu nuts.

H. M. S. *Beagle*, under Wickham and Stokes, from 1837 to 1843, added 300 miles of surveyed coast to the chart of Western Australia, discovering Fitzroy River, which they followed up for 100 miles. Captain Stirling, afterwards Governor, surveyed several bays near Swan River in 1827. Captain Bannister had great difficulty in reaching the Sound overland from Swan River, in 1831. Mr. Clark, in 1841, discovered Deep River, and splendid timber land west of the Sound. Particulars of Mr. Eyre's overland journey to King George's Sound, in 1840, are given in the history of South Australia. Considerable rivers may yet be found issuing from the ill-surveyed coast of North-West Australia.

The settlement of the colony of Western Australia was made June 1st, 1829. Captain Fremantle took possession of the country, in the name of George IV., in 1829. A number of gentlemen undertook to send a certain number of emigrants there, free of expense, upon the grant of a certain amount of land. Mr. Peel received thus a grant of 500,000 acres, at eight pence an acre; and 100,000 were granted to Captain Stirling. All these were resumed by the Crown through non-fulfilment of conditions. The experiment did not answer. The land was sandy and inferior; the early settlers lost time and means in foolish

indulgence ; indentured servants left their masters ; and a serious famine followed. Numbers left the colony for Van Diemen's Land. The others struggled on with their little farms. In consequence of want of labourers, they petitioned the Home Government for convict labour, and have since received about 7,000 prisoners. The population is nearly one-half of the convict class. A report of the approach of the French to settle at King George's Sound, induced the Government to send Major Lockyer there with some prisoners from Sydney, in 1825. These were withdrawn upon the establishment of the free colony in 1829. Australind settlement was formed by a party in 1840, acting under an English company, who wished to raise a colony in Captain Grey's good country, but which the expedition could not find. Grey's fertile district was afterwards known. The first governor was Captain Sir James Stirling, from the North Australian Settlement, in 1829. He was succeeded by John Hutt, Esq., in 1839 ; by Lieutenant-Colonel Clarke, in 1846 ; and Captain Charles Fitzgerald, in 1848. The population was 4,600 in 1848 ; 6,600 in 1851 ; 9,300 in 1853 ; 12,000, of whom 8,000 were males, in 1854.

GEOLOGY OF WESTERN AUSTRALIA.

Nothing is known of the interior of Western Australia. A few points only on the coast have been touched by the feet of white men, and fewer still by geologists. The Dutch and other old navigators left no record of rock seeing. The coast is low, sandy, and barren. Hundreds of miles are passed without the presence of a stream. But ranges may exist inland, giving birth to rivers and a fertile country. The water from the heavy rains cannot all be absorbed in the soil or evaporated in the air ; it is, then, probable, that a vast inland lake will be found in the interior. Excepting a patch of good land on Grey's *Glenelg River*, and some tracts of tolerable land along the

banks of other streams, the whole known region may be pronounced barren and profitless.

The base of the country is of sandstone, similar to the Sydney rock, together with a large proportion of granite. The south-eastern coast is of Murray limestone, forming cliffs along the shore for hundreds of miles, three or four hundred feet high. Approaching King George's Sound the granite commences, and continues with root limestone along the south-western coast. A granite rock appears off Cape Riche. A recent limestone rests on the granite of Cape Leeuwin. Between that cape and Cape Naturaliste greenstone trap prevails. At this point the basaltic columns arise. Tertiary limestone and basalt form the shore of Geographe Bay. There are sandstone caves near Cape Naturaliste South of Leschenault Peninsula, on the coast, the basalt assumes the appearance of the Giant's Causeway in Ireland.

The Darling Range and its spurs are of granite, slate, quartz, and trap. There is no true anticlinal axis. They appear to have arisen before the coal period. The crystalline rocks extend northward to Gantheaume Bay, which is of Silurian sandstone. The banks of the Murchison River are of greenstone, and fossiliferous limestone is by Mount Wizard. Shark's Bay is of recent limestone conglomerate. Dirk Hartog Island contains quartzose sand in a calcareous cement with shells, and Bernier Island is of similar lime formation. The pearl oysters of Shark's Bay are valued at £50 a ton. Pearls as large as peas have been extracted from the mother of pearl. Guano is brought from the islands in and about the bay. The Albrolos are composed of coral, sand, and pulverized shells, in limestone. Greenstone is the rock of Dampier's Archipelago, Depuch Isle, and Dampier Land. There is basalt at Sunday Strait, Stephen's Range, and Hanover Bay; quartz at Prince Regent's River; red sandstone at the Glenelg; and crystalline sandstone at Cambridge Gulf. Horizontal sandstone was seen beside Hanover Bay, and in Stephen's Mountains. Limestone, similar to that of the Murray, with marine fossils, forms the low shore of north-western Australia.

The mineral wealth of Western Australia is only partially revealed. Gold is found in several mountain ranges. A silver mine of Toodyay produces fifty ounces to a ton of ore. Silver is found on the Murchison. The silver lead of the Geraldine mine is rich; the Geraldine Company have a capital of £6,400. Very rich zinc is known on the Canning. Iron is common and rich on Wizard Peak. Copper is found in the Darling Range, Camden Bay, &c. Good coal is obtained on the Irwin and Murchison Rivers. The Irwin seam is six feet thick, but forty miles from the sea. The Murray coal is bituminous. The mineral is also discovered in Doubtful Island Bay.

SOUTH AUSTRALIA.

SOUTH AUSTRALIA is separated from Victoria and New South Wales on the east by the 141st degree of longitude, which passes near the river Glenelg. It is bounded on the west by the 132nd degree of longitude. On the north by the 26th degree of latitude; and on the south by the sea.

The eastern boundary is 840 miles long, the western 420, and the northern 360. The area is about 300,000 square miles. The population is 100,000, besides 3,000 aborigines.

The settled portion of the colony is chiefly confined to the eastern shore of St. Vincent's Gulf. Almost all the rest is supposed to be a sandy desert. There is a space 550 miles long by 400 broad, in which there is no settlement.

MOUNTAINS.

South Australia is not a mountainous country.

One chain extends from Cape Jervis northward to Lake Torrens, between the Murray and the Gulfs. Near Cape Jervis it is the Wakefield Range; higher up, the Lofty Range, near Adelaide; then, in succession, the Barossa; the Belvidere, by Kapunda; the Bryan, by the Burra; the Flinders Range, by Lake Torrens.

The principal mountain peaks northward of Adelaide are—Gawler, 1800 feet high above the sea, and 15 miles from Adelaide; Rufus, in the Belvidere, 2,500 feet; Horrock's, 2,000 feet, and 80 miles; Camel's Hump, west of the Burra, 100 miles; and Razorback, north of the Burra, 2,900 feet, and 120 miles distant.

Mount Bryan, 3,000 feet, is 200 miles distant; Blackrock, 2,800 feet, and 180 miles; Remarkable, Flinders Range, near Spencer's Gulf, 3,000 feet, and 180 miles; Brown, 3,000 feet, and 200 miles; Arden, 3,000 feet, and 230 miles; Hopeless, near Lake Torrens; Eyre and Bonney are 250 miles north of Adelaide.

To the north-east are Kaiserstuhl, in the Barossa, 2,000 feet, and 40 miles distant; Crawford, 1,900 feet, and 35 miles; Torrens, near Gummaracha, 1,900 feet. To the eastward and south-east are Mount Lofty, 2,300 feet, and 10 miles; Barker, 1,700 feet, and 24 miles; Beavor, 30 miles; and Bremer 35, from Adelaide.

To the south are Panorama, 25 miles from Adelaide; Terrible, south of Willunga, 1,300 feet; Compass, east of Willunga, 1,200 feet; Magnificent, near Compass; Cone and Jagged, 1,300 feet, and 45 miles from Adelaide; Newland,

by Encounter Bay. The Volcanic Craters of Muirhead, Gambier, and Schank, are about a dozen miles from the Victorian boundary.

No mountain ranges are known north of Lake Torrens. Between that lake and the Darling, on the New South Wales side, are the Stanley, Grey and Stokes' Ranges—the last is near Cooper Creek. In Eyria Peninsula is the Gawler Chain, with Mount Sturt, running from east to west.

RIVERS.

South Australia is not well watered. No stream but the Murray runs constantly in summer. The rivers descend from the great central chain towards the Gulf on the west, or to Lake Victoria on the east. No creek reaches the Murray, being lost in the sand, like many Australian rivers.

The Murray, 2,400 miles long, rises from the Australian Alps. It is first called the Indi or Limestone, then the Hume, and lower down the Murray. Its mouth at Encounter Bay is a third of a mile broad. Its course through South Australia from Victoria is 700 m^{iles}. From the Goolwa Passage in the Lake to Moorundi is 120 miles; to the Darling, 600; and to Swan Hill, Victoria, 900. The Murray is 250 yards wide for hundreds of miles. Wellington, on the Murray, is 120 miles west of the Victorian boundary.

The rivers falling towards the Gulf of St. Vincent are—the Yankalilla, near Rapid Bay; Oonahparinga, Sturt, Torrens, Gawler, and Wakefield.

The Light, by Kapunda, is north of the Gawler; its tributaries from the north are the Gilbert and Julia Creek. The Dirty Light is ten miles north of Kapunda.

The Onkaparinga rises in Mount Lofty Range, and runs near Balhanna, Hahndorf, and Noarlunga. The Torrens has a south-westerly course, from Mount Single Tree of the Lofty Range, through Adelaide to a marsh near the Gulf. The Gawler rises in the Belvidere Range, and receives the waters of the North and South Para from the Barossa Range. The Little Para runs from Mount Gawler toward the North Arm.

The Wakefield is at the head of Gulf St. Vincent. The Broughton, from Mount Bryan, flows westerly, with its branches, the Hutt and Hill. The Burra Creek is on the Burra Burra Survey. It rises in the Bryan Range and trends towards the Murray.

Toward Lake Torrens are the Saltia, Siccus, Burr, and Frome. East of the lake is Sturt's Cooper Creek, the supposed continuation of Mitchell's Victoria River. Strzelecki Creek is by the Stony Desert, and Eyre, north of that desert.

On the eastern side of the Dividing Range are the Rhine, from the Barossa; Reedy Creek, from near the source of the Torrens; the Bremer, with Barker Creek, from Mount Lofty to Lake Victoria; the Angus, into Victoria; and the Currency Creek, into the Goolwa. The Hindmarsh and Inman or Nixon reach Encounter Bay. Maria, Salt, and Musquito Creeks are in the desert, by the Coorong

Lake. Two subterranean rivers from Mount Gambier gain the sea in Discovery Bay.

LAKES.

Lake Victoria is 30 miles long by 15 broad, and from 6 to 12 feet deep. The Goolwa Passage in the lake, between the shore and Hindmarsh Island is 13 miles long, and 10 to 18 feet deep. The Salt Lakes, Albert and Coorong, unite with Victoria. The Coorong or Bitter Lake, running parallel with Encounter Bay, and a mile from it, is 80 miles long, and about a mile broad.

There are many salt lakes in the limestone country, near Guichen and Rivoli Bays ; as Eliza, Hawdon, George, Frome, and Bonney. The fresh water lakes of Leake and Edward, north of Mount Gambier, were once craters of volcanoes.

Lake Torrens, of a horse-shoe shape, is about 500 miles long by 20 broad. The salt lake Lipson is north of Cooper's Creek. Many salt lakes are in Eyria or Port Lincoln Peninsula, which is of a triangular shape, 200 miles each side.

ISLANDS.

Kangaroo Island, south of the Gulfs, is 100 miles long, by 30 broad ; the American Inlet nearly divides it. Hindmarsh, 12 miles long, is at the south-west end of Lake Victoria ; and Torrens is in Port Adelaide. Thistle, Banks, Althorpe, and Boston Isles are near Port Lincoln. Investigator's Isles, and the Nuyts' Archipelago of

Flinders, St. Peter, St. Francis, &c., are west of Eyria Peninsula. The Pages are at the entrance of Backstair's Passage.

COUNTIES.

The occupied portion is divided into twelve counties—Frome, Burra, Stanley, Gawler, Light, Sturt, Adelaide, Hindmarsh, Russell, Robe, Grey, Flinders. These are subdivided into districts called Hundreds.

Flinders includes Eyria or Port Lincoln Peninsula. Grey, containing 2,140 square miles, has the sea to the south, and the Victoria boundary to the east. Robe, 2,070 square miles, has Grey to the south, the boundary to the east, and the sea to the west. Russell, 1,550 square miles, extends from the mouth of the Murray to Salt Creek, at Coorong, and northward thence to the Murray again.

Hindmarsh, 1,990 square miles, is between Encounter Bay and Gulf St. Vincent. Adelaide, 1,160 square miles, is north of Hindmarsh, and beside Gulf St. Vincent. Sturt, 1,330 square miles, has Adelaide County to the west, the Murray to the east, and Lake Victoria to the south. Eyre, 1,625 square miles, has Sturt to the south and the Murray to the east.

Gawler, 1,040 square miles, beside the Gulf, is north of Adelaide County, and separated from it by the river Gawler. Light, 970 square miles, is between Gawler and Eyre. Stanley, 1,410 square miles, has Gawler to the south, and

Broughton River to the north. Burra is east, and Frome north, of Stanley. The divided country contains only one-twentieth of the province.

The Tatiara country, north-west of Mount Gambier, consists of plains and swamps, surrounded by Mallée scrub, a dwarf sort of eucalyptus. The Mosquito Plains are between Tatiara and Lake Coorong. German Flat is east of Lake Bonney, and Biscuit Flat near Guichen Bay. Chase's Pound Valley is 250 miles north of Adelaide.

TOWNS,

Adelaide, the capital, on the River Torrens, on the east side of Gulf St. Vincent, in latitude 35° S., longitude $138\frac{1}{2}^{\circ}$ E., contains 18,000 inhabitants. Port Adelaide, 8 miles from the city, on an inlet of the sea, has 4,000. Between these are Hindmarsh and Albert Town. The North Arm Port is 10 miles from Adelaide.

The following townships are north of Adelaide: Salisbury, 12 miles distant; Gawler, 25; Lyndock Valley; Kapunda, 50; Clare, by Emu Flats, 90; Penwortham, near Clare; Koorunga, at the Burra Burra, 100; Redruth and Aberdeen, by Koorunga; and Augusta, at the head of Spencer's Gulf, 220.

To the north-east are—Klemsig, 3 miles; Payneham, 6; Montecute, 10; Gummeracka, 25; Bethany; Tanunda, 40; Langmeil; Tungkillo or Reedy Creek, 45; Angaston, 50; Poonawarta; Moorundi, on the Murray, 100. To the

north-west are—Port Gawler, 25 ; and Wakefield at the head of St. Vincent's Gulf, 80 miles.

To the west are Kensington, 3 ; Lobethal ; Balhanna, 20. To the south are Mitcham, 4 ; Morphett Vale, 16 ; Noarlunga, on the Onkaparinga, 20 ; Maclaren Vale ; Willunga, 30 ; Aldinga ; Myponga, 45 ; Yankalilla, 50 ; Yattagalinga ; the Goolwa Passage, 60 ; Port Elliott, Encounter Bay, 6 miles from the Goolwa.

To the south-east are Glen Osmond, 4 ; Echunga, 18 ; Hahndorf, 20 ; Nairne ; Mount Barker, 25 ; Macclesfield, 30 ; Strathalbyn, on the Angas, 40 ; Wellington, on the Murray, near Lake Victoria, 70 ; Robe Town, in Guichen Bay, 200 ; Grey Town, in Rivoli Bay, 240 ; Gambier, 270.

Glenelg and Brighton, near Adelaide, are in Holdfast Bay. Kingscote is in Nepean Bay. Kangaroo Island. Franklin Harbour is north of Port Lincoln. Port Lincoln is 200 miles west of Adelaide.

Tanunda, Hahndorf, Lobethal, and Bethany are German towns. Aberdeen is outside the Burra Survey. The sides of Burra Creek used to be excavated for miners' dwellings. Around the noble harbour of Port Lincoln the country is a desert. Archdeacon Hale's Native Settlement is near Port Lincoln. Yorke Peninsula has no settlement, the soil not being thought favourable. Moorundi is liable to be flooded.

The South Australian coast was discovered by Captain Flinders, in the Investigator. He passed

the 132nd degree, the western boundary, on January 28th, 1802. He named the several bays and gulfs. Captain Sturt sailed down the Murray to Lake Victoria, in 1830. Captain Barker walked over the Adelaide Plains in 1831. Mr. Eyre saw Lake Torrens in 1839, and went overland to Swan River in 1841. Captain Sturt discovered the northern desert in 1845.

A private association to colonise South Australia was formed in London, in 1834. Governor Hindmarsh came with the company's settlers, December 28, 1836, and proclaimed the colony. A few years after the company failed, and the Crown took the land. Colonel Gawler became Governor in 1838 ; Captain Grey in 1841 ; Colonel Robe in 1845 ; Sir H. E. Fox Young in 1848 ; Sir R. Macdonnell in 1855.

The exports of the colony are copper, wool, corn, hay, and gold. The Burra Burra copper mine was opened in 1845. For the value of South Australian exports, imports, revenue, and expenditure, see Appendix.

GULFS AND BAYS.

Spencer's Gulf is 60 miles wide at the entrance, and 250 deep. St. Vincent's Gulf is 50 miles wide, and 100 deep. Yorke Peninsula, 120 miles long by 20 broad, is between the two gulfs. The bays near the western boundary and in Eyria Peninsula are—Fowler, Denial, Smoky, Streaky,

Anxious, Coffin, Sleaford, Boston, and Port Lincoln. Port Lincoln is 5 miles across, Sleaford 8, and Fowler 12. Ports Yatala and Augusta are in Spencer's Gulf. Investigator's Strait, 50 miles long by 20 broad, is between the two gulfs; and Backstairs Passage from Gulf St. Vincent to Encounter Bay.

In Gulf St. Vincent are Holdfast Bay, near Adelaide; and Aldinga, Yankalilla, and Rapid Bays, to the south. Nepean is in Kangaroo Island. Port Elliott and Victor Harbour ~~are~~ near the Goolwa, in Encounter Bay. Port Pullen is at the mouth of the Murray. Lacepede Bay is at the end of the Coorong; Guichen is south of it; and Rivoli Bay south of that again. Encounter Bay is 18 miles across, Nepean 18, Lacepede 20, and Guichen 3 miles.

CAVES.

The principal capes are—Nuyts, by Fowler Bay Whidbey, east of Port Lincoln; Catastrophe, south of Port Lincoln; Spencer, south of Yorke Peninsula; Willoughby, east, and Gantheaume, south of Kangaroo Island; Jervis, south-east of Gulf St. Vincent; Bernouilli, south end of Encounter Bay; Dombey, by Guichen Bay; Jaffna and Lannes by Rivoli Bay; Buffon, south of Rivoli Bay; and Northumberland, by Discovery Bay, near the boundary.

DISCOVERY OF SOUTH AUSTRALIA.

Although the Dutch Nuyts, in the *Good Shepherd*, had sailed 1,000 miles along the southern coast, from the Swan River side, in 1627, yet he did not reach the present western boundary of South Australia. Captain Flinders, who had previously discovered several places in New South Wales, and properly surveyed Port Phillip Bay, left London in 1801, on a voyage of discovery, in the ship *Investigator*. He followed the course of Nuyt, and gave names, as Flinders &c., to several islands of Nuyt's Archipelago. He passed the 132nd degree of longitude—the western boundary of South Australia — on January 28, 1802, the date, therefore, of the discovery of that province. The Captain then proceeded along the coast. He called Fowler Bay after his lieutenant; Thistle Island after his sailing master; Port Lincoln, from his native county; St. Vincent and Spencer Gulfs, from earls of those names; Nepean Bay, from Sir Evan Nepean; Yorke Peninsula for Sir Edward Yorke; and Cape Catastrophe from the unfortunate place where Mr. Thistle and six sailors were drowned, by the upsetting of a boat. He landed on Kangaroo Island, which he named from the number of those animals found there. No natives being on the island, the seals were so tame as to allow the sailors to strike them before they moved off. The quiet kangaroos evidently mistook them for inoffensive seals; and the seals thought them only harmless kangaroos. Sailing up the noble Spencer's Gulf, Mr. Brown, the naturalist, went ashore near Mount Brown. Flinders thus entered Gulf St. Vincent by Investigator's Strait, and returned by Backstairs Passage into Encounter Bay, so called for there encountering a French vessel. Admiral Baudin, in the *Geographe*, with Captain Freycinet, of the *Naturaliste*, under him, was there on a voyage of discovery. He stopped too long in Tasmania before setting off for the unknown southern coast of Australia, else he would have been before Flinders. As it was, Flinders, coming from the west, met him coming

from the east, in April, 1802, in longitude 139° E. As the English had previously observed the coast, from Western Port to longitude $140\frac{1}{4}^{\circ}$; the French could only lay claim to the discovery of the country between longitude 139° and $140\frac{1}{4}^{\circ}$ —a tract which does not contain a single inlet. Notwithstanding all this, Peron, the naturalist of the expedition, had the foolishness to declare in his work that the French discovered all the coast from Western Port to Nuyt's Archipelago, which received from them the appellation of Napoleon Land; and the two large gulfs were named after Bonaparte and his wife Josephine.

When Flinders arrived at Sydney his shattered vessel, the *Investigator*, was condemned, and the *Porpoise* given to him. Sailing northward, to circumnavigate Australia, he was shipwrecked on the Barrier Reef. Building a boat he boldly rowed back nearly a thousand miles to Sydney. Governor King allowed him the *Cumberland*, of thirty tons. Passing then through Torres Strait, he made his way by Western Australia towards the Cape of Good Hope. His little schooner being shattered by the weather, he put in at the French colony of the Mauritius. There he was seized as a prisoner of war. Declaring his protection from the French Government, as Flinders the navigator, he showed his papers. The Governor said his papers referred to the ship *Investigator* only. Against the wish of the French colonists poor Flinders was detained a prisoner six years. The efforts of the English Government at last procured his release. All this time the French expedition were publishing their splendid volume, detailing their discovery of South Australia. The book by Flinders afterwards exposed this false claim of merit.

In November, 1829, Captain Sturt, with Mr. M'Leay and six men, left Sydney on his second exploration. He reached the Murrumbidgee. Provided with one boat, the party stopped a week to build a skiff, for to carry their provision, but various accidents soon rendered this useless. Rowing down the Murrumbidgee they fell in with a fine broad stream, which Sturt named the Murray after the *Secretary of the Colonies*. One night when he slept bare the natives came and stole his frying-pan and cat-

lasses. After coming in contact with the aborigines, the Englishman showed that courage and kindness which gained him favour. To a party of four Captain Sturt gave presents and a good word. Shortly after about 600 blacks were observed on the high Murray bank, with spears uplifted and savage looks, ready to destroy the crew. All at once the spears were lowered and the tribe departed. This was owing to the interference of the four natives, who showed their countrymen how well the strangers had treated them. Rowing on, they approached another considerable river from the northward, joining the Murray, which Sturt imagined to be the Darling he had discovered some hundreds of miles off. Watched by crowds of wondering aborigines he turned his boat up the new stream, with Union Jack flying, until his course was stopped by a net. Not wishing to injure the property of the natives, he turned back again to the Murray, followed by the loud cries of the grateful owners of the net. Observing further a small river near he called it Rufus, from the red hair of his friend M'Leay. For 600 miles more he pursued his course between the limestone banks, when the waters spread into a large shallow lake, which he named the Alexandrina, after the Princess Victoria Alexandrina, now our beloved Queen. Casting his eye to the west, he saw the hills overlooking the plains of Adelaide. Making signs to an old native about the river, an imitation of the rushing and roaring of waves to the southward was the reply ; by which he learned that he was near the sea. A few miles further brought him to the Sandy Bar by Encounter Bay. With failing provisions the Englishmen commenced their return homeward, up the Murray. Amidst much suffering from hunger and fatigue, and encouraged by the kind voice of their leader, the men finished their two thousand miles, pull in eighty-eight days.

In the following year, 1831, in consequence of the report of Captain Sturt, and at his earnest request, Captain Barker was sent to survey the hill country west of the Murray. Landing on the shore of the Gulf of St. Vincent, he walked over the plains where Adelaide was afterwards built, passed over the Lofty Range, named a mountain

after himself, and arrived overland at the mouth of the Murray. Unable to cross, because of the surf, he swam over with his instruments to make observations, and was never seen again. The poor man was pierced by the spears of the alarmed natives. Six years after, Captain Pullen and the Adelaide Judge were drowned, in trying to enter the Murray from the sea.

After the settlement of the Colony other explorations took place. Messrs. Bonney and Hawdon brought stock from the Murrumbidgee to Adelaide, overland, in April, 1838. Mr. Eyre brought sheep in July, after being several weeks lost in the Mallee Scrub, where he discovered Lake Hindmarsh, and being obliged to return to the Murray, and follow the banks of that river. Sturt brought 400 head of cattle overland from Sydney in October. Bonney first drove from Portland Bay to Adelaide in twenty days, discovering a number of salt lakes by the way. The party suffered dreadfully from thirst. Mr. Eyre saw part of Lake Torrens in 1839. Governor Gawler, in 1841, explored the country to the west of the Great Murray Bend. The party killed horses for blood to drink. Mr. Bryan, one of the number, was lost near the site of the Burra Mines, and was supposed to have perished for want of water. The Surveyor General Frome discovered some good pasture land and several small rivers in the Lake Torrens country in 1843. Mr. Darke surveyed the country north of Port Lincoln in 1844, and discovered the barren Gawler Range. He was mortally wounded by the natives, and died in great agony on his way back to the settlement. Mr. Horrocks, after whom a mountain is called, left Adelaide with a camel on an exploring trip, believing this conveyance the best for so dry a region. On his journey he accidentally shot himself.

Mr. Eyre, in 1840, proposed an overland trip to Swan River, Western Australia. Leaving Adelaide in June, he again explored the shore of Lake Torrens. Unable to proceed westward through the frightful desert, scrub, and barren rocks, he came down to Port Lincoln with the intention of following the sea coast to King George's Sound, a distance of twelve hundred miles. The danger was so

obvious, that at Fowler Bay, the western limit of South Australia, he sent back all but three black lads, and one white man, as overseer. They journeyed over the Biscuit Cake stones, and rounded the Great Bight after three attempts. The poor horses were soon so reduced, that they could only carry twenty pounds each. All other things were then abandoned. The want of water was the great trouble to the wanderers, horse-flesh supplying food. On two occasions they travelled for seven days without water. They found some by digging in white sand near the sea, although they were seven hundred miles walk without surface water. One day Mr. Eyre returned to the camp, after seeking for lost horses, and found his companion murdered, most of his provisions stolen, and his natives gone. Driving onward two or three horses, he set off on his journey through the desert alone. The lad, Wylie, afterwards returned to him. When nearly perishing, the two walking skeletons fell in with a French whaler by the coast at Rosister Bay. There they were kindly treated. Pursuing their journey, they arrived at King George's Sound in July, 1841.

Captain Sturt, then Surveyor General of South Australia, made another attempt to penetrate the unknown interior. Leaving Adelaide, August 15, 1844, he followed the Murray to the Darling. Striking off to the north west, he came to the Barrier and Grey Ranges. Approaching a rocky glen, in which there was water, the party formed a depôt. Surrounded by deserts, they were completely shut in, during the dry season, for 160 days. The heat, on one occasion, was 157° in the sun, and 134° in the shade. It was there that Mr. Poole, the assistant, died of scurvy. Again and again did Captain Sturt try to discover water elsewhere. On one trip he reached the north-eastern salt shore of Lake Torrens. At last they were able to move onward through the desert. A few channels of creeks were seen, as O'Halloran and Strzlecki; also, some salt lakes. Very few natives came near. Water fowl passed in flocks toward the north west, as if some inland sea were still in that direction. No great mountain dividing range was observed. The rivers flowing inward from other hills

may be supposed to form a vast lake in winter, though the hot winds may pass over its dried surface in summer.

In lat. 27° , Sturt entered the curious Stony Desert, one hundred miles long. Crossing this, the sand ridges re-appeared. The dry channel of the Eyre Creek was passed, and the same dreary sand hills were spread out before him. So far were the party now from water, that they feared to go further. Their position was long. 138° , E., by lat. $24\frac{1}{2}^{\circ}$ S. They hastened back just in time to get a drink, by straining mud through a handkerchief. Changing their course to the south east, they discovered a creek containing water, named after Judge Cooper, of Adelaide. The natives behaved kindly to the Englishmen, bringing them millet cake, baked fish, and roast duck. Cooper's Creek is doubtless the continuation of Mitchell's Victoria River, and the outlet of the water is towards Lake Torrens. Loud cheers of welcome saluted the worthy traveller from the Darling and Murray tribes on his return. Captain Sturt gained his happy home January 19, 1846.

No discovery of importance has followed this expedition. The navigation of the Murray is an important object of interest to South Australia. Although Mr. Bunce, the Naturalist, had, in his Murray trip in 1850, referred to the practicability of such navigation, yet must the merit of trial and success be given to Captain Cadell. In August, 1852, he left Swan Hill, in a boat made wholly of canvas, because of rocks and snags, and came a thousand miles in twenty-two days. In August, 1853, through the liberality of Governor Young's Government, he conducted a steam-vessel up the noble Murray, far beyond Swan Hill. of Victoria. A railway, six miles long, will lead from the Goolwa of Lake Victoria to Port Elliott, Encounter Bay, whence the produce can be taken to Adelaide or London.

HISTORY OF SOUTH AUSTRALIA.

Soon after the published report of Captain Sturt's discovery of the Murray, the colonisation of the country

was determined on. In 1831 an attempt was made to organize a private association for this purpose. It failed. A second trial succeeded. In August 15, 1834, the Parliament granted a charter to a colonisation society, for the establishment of settlements in some parts of Southern Australia, upon the Wakefield system. A governor was to be appointed by the Crown, but a Resident Commissioner in the Colony was to superintend the affairs of the London Commissioners, who had to report annually to Parliament, and who were empowered to raise on mortgage of future taxes, the loan of £200,000, for preliminary expenses. All the receipts for land sales were to be expended in sending out free emigrants. The first Commissioners were Messrs. Torrens, Angus, Barnard, Hutt, Lefevre, Mc Kinnon, Mills, Montefiore, Palmer, and Wright. When the Colony had 50,000 inhabitants, a local Government was to be formed; should less than 20,000 be, after ten years' trial, the waste lands were to revert to the Crown. Liberty was granted to organise one or more provinces between the longitudes of 132° and 141° E. As an earnest of their good faith, the Commissioners were required to pay down a bonus of £20,000 to the Government. This they could not do. Mr. George Fife Angus rescued them from the dilemma. Resigning his commission, he established the South Australian Company, who were to buy land of the Commissioners, trusting to a rise in value for their profit. In conjunction with Captain Torrens and Mr. Gouger he raised the £20,000. The Company received an equivalent of land, at 12s. an acre, with the liberty of pasturage over sixteen times that quantity at a yearly rental of £2 per square mile. The 437 preliminary sections contained 134 acres each, and the purchaser of any section received also a town acre. Afterwards the sections were 80 acres, and the upset price £1 per acre. At that period, from the highly coloured description of Kangaroo Island, by Captain Sutherland, that with its port, Kingscote, became the favourite locality in the eyes of intending purchasers. A town, to be called *Adelaide*, was to be formed somewhere eastward of St. Vincent's Gulf. Consequently the Company selected 320

lots from the chart of Kangaroo Island, and 102 of Adelaide; 96 of which were afterwards fixed on the northern side of the city. The South Australian Company had a capital of £300,000, in December, 1836. Mr. Angus was the first Chairman of the Company, and Mr. Fisher, the first Resident Commissioner. The first Company's vessel, the *John Pirie*, 105 tons, arrived August 16, 1836; the first Commissioner's vessel, the *Rapid*, 160 tons, came August 19. Governor Hindmarsh did not reach the province till December 28, when the Colony was proclaimed. The first land sale of Adelaide lands was in March, 1837. The town, named after the good queen consort of William IV., was divided into 1,040 acre lots.

The early settlers were of a respectable class. Many Germans emigrated to the favourite Colony. Colonel Gawler, a benevolent and excellent man, succeeded Governor Hindmarsh, in 1838. He laboured earnestly for the development of the resources of the Settlement, but went into extravagant expenses for Government buildings. He had faith in the future progression of the place, and erected public works on a scale which was then considered ridiculous. This outlay certainly produced a brilliant, though transient, commercial prosperity. The settlers became reckless in their speculations, and indifferent to their expenditure. In 1840, flour was £100 a ton; bread, 1s. a pound weight; beef, 10d.; butter, 3s.; hay, £16 a ton, and potatoes £35. The Governor drew bills on England, for money. These were refused payment. The Government and the colonists suddenly became insolvent. The British authorities, in March 1841, advanced £155,000 to the Commissioners. It was evident, however, that the Association could not continue. Advancing, therefore, a further sum of £56,000, the English Government accepted of the resignation of the Commissioners, and the settlements were transferred to the Crown. The boundary of South Australia was then defined to be from 132° to 141° E. long. The debt has been refunded out of the local taxation. Captain Grey, the traveller in Western Australia, was sent to supersede the worthy, but improvident, Colonel Gawler, in 1841. His administration was

rigidly economical. The Government works were stopped, and the labouring community suddenly thrown out of employment. The depression of 1842 and 1843 was a most painful one. In 1842 only 150 Government immigrants arrived in Adelaide. Gradually the Colony emerged from trouble, and a sounder basis for prosperity was established. The discovery of the Burra Burra and Kapunda Copper Mines hastened the improvement of affairs. So valuable an export, in addition to their corn and wool, completed the good fortune of the settlers. The population increased. In 1837 there were 200; in 1838, 5,000; 1840, 10,000; 1843, 17,000; in 1845, 22,500; in 1848, 40,000; in 1850, 65,000; in 1855, 100,000. Colonel Robe became Governor in 1845, Sir Henry Ed. Fox Young in 1848, and Sir R. Macdonnell in 1855. In 1851, the gold discoveries in the neighbouring colonies seriously affected South Australia. The Colony was paralysed, property fell fearfully in value, labour departed, and great distress ensued. But the return of lucky diggers, the enormous rise in the price of farming produce, and the judicious financial administration of Governor Young, once more brought smiles to the homes of Adelaide.

GEOLOGY OF SOUTH AUSTRALIA.

The geological structure of South Australia is little known, as more than three-fourths of the country have been unexplored. The settled portion has far less of the auriferous and igneous rocks than Victoria. The mountain ranges between the Murray and the Gulfs are of primitive formation; thence westward to the sea, and eastward to the Murray, and beyond the Murray to Victoria, are Tertiary strata of fossiliferous limestone, with occasional intrusions of granite. The strata are tilted on each side by the upheaving of the central chain. The northern upper floor of the Colony, beneath the sand, would appear to be sandstone. Westward of Spencer's Gulf, the ancient crystalline and igneous development appears in the form of

quartz, granite, greenstone, &c. Secondary sedimentary formations are almost wholly wanting. The metalliferous country is confined to the Dividing Range running northerly, and no part of the world has greater treasures of copper, lead, and iron.

For more than two hundred miles the Murray runs between cliffs of marine limestone, having an abundance of fossils of recent Tertiary period; as the Pecten, Terebratula, Austrea, Spatangus, Echinus, Nautilus, teeth of Shark, Coral, &c. The upper stratum contains Oyster shells unbroken. Below this the shells are broken. There is an alternation of beds of sand without fossils. The unbroken Pecten, &c., are deeper. Forty strata have been counted in that limestone, which contains gypsum, selenite, nitrate of potash, &c. The limestone extends across the Victoria boundary, commencing in some places only twenty miles west of the Murray. In a few places, as Mount Gambier, Mount Schank, Lake Leake and Lake Edward, there are extinct volcanoes, with a small area around them of porous basalt. The neighbouring country is full of cavities containing water. Crater-like holes exist on Mount Schank and Mount Gambier, with immense depth of transparent water. The top of Schank crater is two miles round, with a narrow rim. The united walls of three distinct craters form Mount Gambier. In limestone caves, near Schank, remains have been discovered of extinct and gigantic emus and marsupial animals. The Devil's Punch-bowl, near there, is 260 yards round, with water at a great depth. The whole country of Mount Gambier and Tatiara seems tunnelled and full of water, though without rivers. Descending one of the curious natural wells by a rope, a person alights upon a small island, around which is water enough, and height enough, to sail a man-of-war. Several subterranean rivers run in the district, two, at least, of which appear, and gain the sea south of Mount Gambier. A rough root, or coral limestone, with caves and stalactites, extends along the shore, from Salt River Coorong, to the Glenelg River, at the eastern boundary. *Chloride of soda* abounds near the salt lakes. *Calcareous sandstone*, in flags, is near the Coorong. Very curious

concretions of limestone, of the shape, size, and name of biscuits, are near Guichen Bay, and also on the west side of Eyria peninsula. In the Gambier district, near the sea, is a broad band of flint, twelve miles long, running parallel with the coast, near Cape Northumberland; there are also several headlands of flint in Discovery Bay, in this limestone formation. Intrusive granite shows itself in the bed of the Murray, in Tatiara and Gambier districts, and by the Coorong, the Salt Creek, and Cape Bernouilli. The Plains of Adelaide are of Murray limestone, and also the greater part of Yorke Peninsula. Similar rock occurs on the western side of Eyria Peninsula. A superior sort of limestone is seen at Boston Bay. Sulphate of lime constitutes three-fourths, iron one-sixteenth, and soda and potash one-sixteenth, of the soil of Adelaide Plains. The subsoil contains less lime and more silica.

Commencing with the Dividing Chain of Mountains at Cape Jervis, towards the south, we observe granite, primitive limestone, and slate, with alternations of quartz veins. Granite, &c., with barytes in talc, are in the Wakefield range. At Rapid Bay, with magnesian limestone and excellent white marble, there are older metal-bearing rocks. The Mount Lofty Range, in addition to primitive formations of metalliferous slates, quartz, &c., has good building stone in its micaceous sandstone, beside talc and dolomite. The top is felspathic, and the valleys are filled with angular debris. The head of Single Tree Mountain is of trap granite. Proceeding from Adelaide to Mount Barker and the eastern country beyond, the traveller passes over limestone for four miles to gain the slate and quartz hilly region. Detritus of quartz and micaceous sandstone occurs, and then come the granite, gneiss, ancient limestones, staurotide, slate, and talc of Mount Barker district, together with garnets in hornblende. The rocks of the neighbourhood are thoroughly auriferous, and gold has been found around Mount Barker, especially about Echunga.

At Macclesfield the granite is succeeded by the Murray limestone, and granite also presents itself at Strathalbyn. Between Barker District and the river Bremer, the mica-

aceous sandstone glistens the roadway for miles. The rocks alternate with quartz bands in parallel ridges, at an angle of 30° , and nearly north and south, in true Diggings' character. From the way in which the ridges appear above the surface, they have been called the Tombstone Ranges. The crystalline rocks continue to the Pine country, twenty miles from Wellington on the Murray, when the limestone recommences. North of Mount Barker is the Tombstone region of Mount Torrens district. The travelling is very uncomfortable over these auriferous parallel ridges, although the tourist would be delighted with that romantic locality on a fine day, with the silver wattle in flower, and the ground sparkling with the brilliant mica. Bald Hill, near Mount Torrens, is of slate. Proceeding thence to Tungkillo, or Reedy Creek, the rocks change to the dull felspathic. The felspathic granite is at one end of the copper mine there, and the micaceous granite at the other. Both are at an angle of 30° . By the creek are enormous blocks of red granite; contorted gneiss, having granite-like bands between layers; some bad limestone; and some conglomerates, called Plum-pudding stone. At the White Steps of Reedy Creek, the soft pipeclay is raised in a bank.

Going northwards from Adelaide, the traveller journeys over the good Steatite for pottery at Para, and the Silurian slate, waverlite and quartz of Gawler Plains, which are covered with boulders and detritus of crystalline rocks. North of Mount Torrens is the highly interesting Barossa Range, so rich in minerals. There are granite, quartz, porphyry, tourmaline, diallage, granular quartz, crystalline, magnesian and mountain limestone, slates, sienite, hornstone, &c. The White Marble Country is fifteen miles across, on the western slope of Barossa. There are also talc, fine crystals, soapstone, glauber salts, rock-silk, agate, jasper, garnets, amethysts, topazes, and diamonds, though the precious stones are not quite true to be valuable. The excellent but eccentric Mengé was the earliest and most persevering revealer of the Barossa, and *other South Australian, mineralogical treasures. Iron pyrites occurs alongside veins of opal; in the opal are often*

fibres of asbestos. Intrusive granite is frequent, especially on Kaiserstuhl. Mengé thought the plain between the Barossa and Hawdon hills, some eight or ten miles wide, was a deposition from hot springs. In this district, near Angaston, is a dropping well, like the English Knaresborough, which petrifies substances placed beneath it with calcareous matter. Poonawarta is of granite. The hornstone of Barossa differs from that of Europe, in having magnesia and lime, with silicious tufa, exactly like that of the Iceland Geysers. The Belvidere Range, north of the Barossa, has the usual crystalline rocks. The metals are good. Alum, rock cork, rock tinder, rock silk, soapstone, rock leather, rock wood, opal, silicious tufa, and the micaceous and quartzose tombstone rocks are found in all these ranges. The Black Rock is of basalt: sharp vertical auriferous bands lie to the west of it. The Razorback and Bryan mountains are similar to the foregoing chains. At the Burra Burra there are magnesian limestone, slates of all varieties, quartz bands, and granite. Quartz detritus covers many of the rises around. Black quartz is common in Flinder's Range, while serpentine and porphyry abound at Mount Arden. Rounding the head of Spencer's Gulf, we enter Eyria, or Port Lincoln Peninsula, consisting chiefly of granite, porphyry, inclined slate, and dark intrusive greenstone in quartz. Mount Olynthus is of quartz and greenstone. Near Boston Bay, Port Lincoln, gneiss, granite, slate, and greenstone, with copper, prevail. The southern part of Yorke Peninsula is of granite and trap, with recent Murray limestone on the top of the granite. On the Encounter Bay side, west of the Murray, sienite and red granite predominate. Wilunga has excellent roofing slate and plumbago. Trappean granite, schorl, and white marble, are observed at Rapid Bay, and granite in the valley of the Nixon. Though the river Onkaparinga flows through a primitive rock and gold country, yet at its mouth trappean granite is seen.

The Dividing Range of South Australia is very rich in metals. Tin is obtained in the Barossa. Lead is abundantly spread through the older rocks. The first lead mine near Adelaide, Wheal Gawler, was opened in 1841.

through the wheel of a loaded dray breaking a surface ridge, and disclosing to view the shining metal. Glen Osmond lead mine was commenced in November, 1845. Silver is associated with the lead ore. In Belvidere it was, in carbonate of lead, 80 oz. to the ton. The lode was suddenly lost by a fault, and never recovered. In the Wheel Emma lode it was in pipe clay.

Manganese and antimony are found in Bryan and Lofty Ranges. Iron occurs under all circumstances, and often 80 per cent. of metal. Breccia of quartz pebbles is cemented by bog-iron ore. A lode of that metal, ten feet thick, may be seen in the mountain limestone of Barossa. Specular iron ore reveals itself at Cape Jervis, and various sorts of iron ore are in the Torrens, Lyndock Valley, and the different ranges. Mr. Mengé, in 1841, advised the South Australians to work through the iron, and reach the gold beneath, as in Siberia. Sturt's stone walls, from Grey's Range, are of oxide of iron. Gold was sought for on geological principles by Mr. Phillips, Mineral Surveyor, and found in dark coloured earth, about ten miles from Adelaide. This was in April, 1846, and the place was named Victoria Mine. The vein did not prove rich enough to work. The same gentleman offered his services to Mr. Latrobe, then Superintendent of Port Phillip, declaring his ability, if salaried by Government, to find a gold field: this was before the discovery of gold in California. A gold company was afterwards established, to wash the golden sand of the Onkaparinga: they bought twenty miles of river frontage, and worked near Balhannah. When gold was discovered in Victoria, the South Australians wrought for some time at a little gold field of their own, near Echunga, in the Mount Barker District. No coal has been seen in the rocks of the Colony. But the glory of South Australia lies in its copper, and its unequalled Burra Burra. Copper is very generally distributed in the ranges, from Cape Jervis to Mount Remarkable. A shepherd built his chimney of a heavy stone found on his run. Thinking it valuable, he showed it to a Cornish miner, who told him it was nothing. The news spread, and the South Australian Mining Association was

organized in April, 1845. Purchasing 10,000 acres of Government, at £1 an acre, out of their capital of £12,320, in £5 shares, they opened the wonderful Burra Burra Mine, on September 29, 1845. In the year 1851 they raised thence 23,000 tons of ore, valued at £350,000. For a time the dividends were at the rate of 800 per cent. per annum. From it a block of blue carbonate of copper was obtained, called the Punchbowl, 30 inches across, full of beautiful mineral crystals. The Malachite is the largest lode. The lowest level is at 50 fathoms depth. The mine is now in full operation. The Kapunda Mine was discovered also in 1845: it has paid well. The ore is principally grey sulphuret, muriate, and carbonate. The Tung Killo, or Reedy Creek Mine, the property of the English Australian Company, produces chiefly the red oxide of copper. A very rich bunch of ore was found there. In 1851 there were, in South Australia, 3 lead mining companies, 33 of copper, 3 of silver, and 3 smelting works. The first mineral export from Adelaide was in 1843, consisting of 30 tons of lead, valued at £128. The highest amount before the Burra Burra discovery, was £19,000, in 1845.

VICTORIA, OR PORT PHILLIP.

VICTORIA, formerly Port Phillip or Australia Felix, is separated from New South Wales on the north and east by the river Murray, and from South Australia on the west by the 141st degree of east longitude, near the Glenelg River. The sea of Bass's Strait is to the south.

The northern boundary, following the crooked course of the Murray, is about 1,400 miles long. The western, from the Murray to the mouth of the Glenelg River, is 280 miles long. The eastern

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boundary is from Cape Howe to the nearest course of the Murray, at Forest Hill, and thence along the river. It is 110 miles from Forest Hill to Cape Howe. The whole is 500 miles in length, and 120 in mean width, containing 90,000 square miles, being nearly four times the size of Tasmania, and half as much again that of England. The population is 300,000. The aborigines do not number 3,000.

The sea coast has five great inlets. The most western one, toward South Australia, is Discovery Bay. Near this is Portland Bay. Port Phillip is about half way along the shore. Western Port is east of Port Phillip. Corner Inlet, of Gipps Land, is farther to the east. A sandy beach of 200 miles leads thence to Cape Howe, the south western extremity of Australia.

In the interior are two great water-sheds—the Alpine Mountains on the eastern side, and the Dividing Range from east to west—through the middle of the Colony. The land to the east is rocky, to the north of the Dividing Range is level and poor, but to the south of that range level and fertile.

MOUNTAINS.

Forest Hill, on the eastern boundary, is part of the Australian Alpine Mountains, running through the Maneroo Plains of New South Wales, southwest to Bass's Strait, between Western Port and Corner Inlet, and dividing the Murray District from Gipps Land. The southern portion of this

snowy chain is called Strzlecki's Range; the river Latrobe passes between the two parts.

The Australian Alps are but the southward continuation of the mountain chain across the continent from Torres Strait. Mount Kosciusko, on the New South Wales side, 6,500 feet above the sea-level, is 10 miles east of the Boundary, although 30 miles north of Forest Hill. The Pilot is 3 miles north of Forest Hill.

The Bogong Range is the loftiest part of the Alps, giving rise to the Mitta Mitta, Mitchell, and Murray rivers. Its highest peaks are Hotham, Latrobe, Leichhardt, Kennedy's Height, and Delegete; the first two are above 7,000 feet. Hotham is 8 miles northwest of Latrobe. Forest Hill, 5,000 feet, is at the junction of the Wellesley, Wallace, and Selwyn counties of New South Wales with Victoria.

Six miles south of Forest Hill are the Cobboras Mountains, from 5,000 to 6,000 feet. The *Playground* is a narrow mountain plain by the Cobboras. The Gibbo Range, to the south of these, and near Lake Omeo, is 5,000. The Buffalo Range is an Alpine spur from Gibbo towards the Ovens River; Aberdeen, its southern peak, is 4,000 feet. Fuller's Range extends northward from the Buffalo, west of the Ovens. The May Hills are east of the River Ovens. Mount Buller, south of Buffalo, is 5,000 feet.

The other prominent peaks of the Victoria Snowy Alps are, Wellington 5,270 feet high, Tombaritba 5,400, Kent 5,130, Baw Baw 5,100, Castle Hill 4,850, Bald Head 4,650, Useful 4,800.

boundary is from Cape of the Murray, the river. J Cape Howe and 180 miles; b mania, The p num T we B

Ben Cruachan of the Gipps Land side the Gipps, Hopeless, Fatigue, 1,300, and the Fainting Gisborne, is in lat. $37\frac{1}{2}^{\circ}$, 120 Castle Hill, by 20 miles east of Wellington, Use- Bald Hill and Tom's Cap is south of Latrobe river. Ben Cruachen is Strzelecki's Chain Corner Inlet. A spur from the Alps enters Wilson's Promontory, the southernmost point of Australia. In this peninsula, Mount Wilson is 2,350 feet high; Hunter, 1,150; and Sincapore, 500. The Dandenong Ranges are from the Snowy Alps. The Cheviot Hills form a spur in the Goulburn District.

The Great Dividing Range strikes off from the Alps in a westerly direction, through the middle of Victoria, dividing the Murray tributaries from those reaching Bass's Strait. Few of the peaks are above 3,000 feet.

It commences, under the names of the Goulburn and Plenty Ranges, by dividing the waters of the Yarra and Goulburn. Disappointment and Mc Kenzie are Plenty Hills. Going westward we pass along the Kilmore Range—northwest by Big and then southward to Mount Macedon,

3,400 feet. Mount Diogenes is 6 miles north of Macedon, and Alexander's Head is 6 to the north-east.

Leaving Macedon the Dividing Range is traced southwesterly to Weid Kruirk, at the head of the Werribee; then westerly by Lava hills, and north of Warraneep and Ballarat to the wondrous Amphitheatre of hills forming part of the Pyrenees Range. Cole, Beckworth, the Brothers, Direction, Misery, Ararat, and Ben Nevis are Pyrenean peaks.

Misery is 30 miles south of Maryborough, and 20 north-northwest of Ballarat. Ararat, the western extremity of the chain, is 20 miles east of Mount Williams, and 30 southwest of Maryborough. Between Macedon and the Pyrenees are Mounts Violet, Greenock, and Bullarook; the last is 20 north of Ballarat. Ben Nevis is 12 north-west of Mount Cole, Daisy Hill north-east of it, and Emu south. Nowhere Hill is near Crowlands.

A partial break takes place after Ararat, when further to the westward rise the lofty Grampians, after which the land falls to the limestone flats of the western boundary.

North of the Pyrenees the mountain chain is continued along the banks of the Avon. A powerful eastern spur runs thence between the Avon and Wimmera to New Bendigo. North-east of the Pyrenees is the Daisy Hill region. The range ten miles north of that is known as Simson or Maryborough, 40 miles west of Mount Alexander.

west of that again. Talbot of the Black Range, north of the Glenelg River, is the most western hill of the central mountains.

Between the Great Dividing Range and the Murray is an extensive plain, on which a few isolated mountains appear. Mount Jeffcott is between the Avon and Avoca. Hope, near the Pyramid Hill, is between the Loddon and Campaspe Rivers, and about 20 miles from the Murray. Swan Hill, by the Murray, is 200 miles north-west of Melbourne.

South of the Dividing Range, also, the ground is generally level, especially toward the westward; only a few scattered hills are found, excepting in Cape Otway District. In the Portland Bay neighbourhood are the volcanic cones of Clay, Eeles 600 feet high, and Eckersley 500. Napier, 1,440 feet, near Mount Rouse, is 30 miles north of the Bay. Kincaid is west of Mount Clay.

Mount Shadwell, east of the Hopkins river, is 30 miles north of Warrnambool. The Sister Hills are south of Shadwell, and Noorat is between it and Lake Timboon. Leura Crater is south of Lake Timboon, and Myrtoon east of it. Mount Emu is 20 miles south of Cole.

The Stony Rises are 50 to 80 miles west of Geelong, south of Lake Corangamite, and around Lake Purrumbet. Mount Porndon, in the middle of these Rises, is south-east of Leura. Clarke or Elephant Hill is 15 miles north-west of Lake Corangamite. The Pentland Hills are near Bacchus Marsh. Rouse is 20 miles south of Sturgeon.

The Latrobe and Black Ranges, by the River

Gillebrand, and also Mount St. George, are south of the Stony Rises. Hesse and Gellibrand, 500 feet, are north-east of Lake Colac. Mount Mercer, by the River Leigh, is 30 miles north-west of Geelong; Moriac is 12 south-west; the Anaki Yowang Hills, 20 north; and Barrabool Hills, 3 west.

Mount Aiken, near the Gap, is 20 miles north-west of Melbourne. Holden is north-west of the Gap, and Kororoit, or Misery, 5 miles south of it. Station Peak, 1,300 feet, is on the west side of Port Phillip Bay, 15 miles north of Geelong. Eliza, on the eastern side of the Bay, is 30 miles from Melbourne. Mount Martha is 10 miles south of Eliza, and Arthur's Seat 7 south-west of Martha. The mountainous region commences 5 or 6 miles from Melbourne, and continues in a north-easterly direction, without interruption, for 500 miles.

RIVERS.

The Alps and the Dividing Range are the two great sources of the rivers of Victoria. The Murray receives the northern streams, and the sea the southern. Other rivers lose themselves in sand or scrub, or pursue a subterranean course to the Murray.

The Murray has several sources. The most south-eastern is the Indi, or Limestone, from Forest Hill, though the largest stream comes from near Mount Kosciusko. After a short northern course it turns to the westward, and reaches the sea, through Lake Victoria, into Encounter

Bay. Its length is 2,400 miles, of which 1,800 are navigable. One-third of its course is in South Australia.

The southern tributaries of the Murray are the Cudgewong, Mitta Mitta, Indigo, Black Dog, Ovens, Goulburn, Campaspe, and Loddon. The Murrumbidgee and Darling then follow, from the north side. The Mitta Mitta, from the Bogan Alps, near Lake Omeo, with its branches the Livingstone and Little River, reaches the Murray 12 miles east of Albury.

The tributaries of the Alpine River Ovens are the King, Buffalo, Buckland, Reedy Creek, and Hodgson Creek. The Goulburn runs westerly, and then northerly, from the Dividing Range, for 400 miles, to the Murray, 10 miles east of the Campaspe. Its tributaries are, the Howqua from Mount Buller, Devil's River from Mount Waranbat, Muddy Creek, King Parrot or Sunday Creek, the Hughes, Deegay Ponds from near Mount Ida, Violet Ponds, and the Broken River from Mount Buller.

The Running and Dry Creeks unite at Broadford, to form Sunday Creek. Mollison's Creek, from north of Mount Macedon, flows easterly into the Sugar-loaf Creek, which unites with the Sunday near Seymour on the Goulburn. Kilmore Creek, from the Dividing Range, is a branch of the Kurkuruc, which runs northerly to Mollison's Creek.

The Campaspe River rises in the Dividing Range, near Weid Kruick Mountain, and *trending to the north-north-east* gains the Murray by

Maiden's Punt, a few miles west of the Goulburn, due north of Melbourne. Its tributaries are, Five Mile Creek from Mount Macedon, Piper's Creek from Carlsruhe, Mosquito Creek, Ida Creek, Coliban River, and the Exe.

The Ida Creek, from Mount Ida eastward, receives the Mc Ivor and Wild Duck Creeks; the Mc Ivor joins near Mount Ida. The Coliban rises near the source of the Campaspe, by the junction of Talbot, Bourke, and Dalhousie Counties. The Exe, from Mount Alexander, receives the Emu Creek and its branch the Sheepwash.

The Loddon or Yarrayne, 400 miles long, rises 6 miles west of the Coliban, and enters the Murray at Swan Hill. Its tributaries are, Middleton Creek, from the South; Fryer, Campbell, and Muckleford, from the north; Limestone, Jim Crow, Joyce, Deep, and Mc Neil, from the south; Kingower, Sandy, and Korong, from the west. Burnt Creek is between Maryborough and Korong.

Campbell's Creek is formed by the junction of Barker and Forest Creeks at Castlemaine, from Mount Alexander. Fryer's junction is 5 miles east of Campbell's. Muckleford Creek is from a western spur of the Alexander Range to near the junction of the Jim Crow. Joyce's junction is by Mount Tarrangower. The Deep Creek or Tullaroop receives Creswick's Creek, the Bullarook, and the Greenock; the latter joins at Carisbrook. The Mc Neil is formed by the union of the Pyrenees creeks of Doctor and Burnbank.

Beside the Forest, Barker, and Sheepwash

Creeks, the following have also their source in the Alexander Range—Bullock Creek, Myers, and Bendigo. The last rises 10 miles south of Sandhurst, and loses itself in the northern sands. The Cornella runs parallel with the Bendigo, on the other side of the Campaspe.

The Avoca, from Mount Cole of the Pyrenees, runs parallel with the Loddon for 300 miles into Lake Baal Baal, whence it may reach the Murray, 30 miles to the north, by subterranean channels. West of the Avoca is the Avon, with its branch the Richardson. Further to the west is the Wimmera River, 300 miles long, from Mount Cole to lake Hindmarsh, and thence to lake Albacuyta. The Yarra-ambiack Creek, by Wimmera, falls north into a Lake Coorong.

The southern waters are more numerous, but of less length than the northern. The Glenelg, from between the Victoria and Grampian Ranges, falls into Discovery Bay, on the western boundary. Its eastern tributaries are, the Wannon, from Mount William, with its branch the Grange; the Chetwynd, Wando, Stokes, and Crawford. The Mosquito Creek is by the Adelaide border.

The Portland Bay creeks are the Surrey, Fitzroy, Eumerella, and Shaw. The Moyn opens into Port Fairy. The Hopkins runs from Mount Cole to Lady Bay, near Warrnambool: its branches are the Salt Creek, and the Emu or Taylor, from the Pyrenees. The Fiery Creek runs into Lake Boloke near the Hopkins. The Woody Yaloak flows southward from the Dividing Range to Lake *Corangamite*.

The Barwon River, from the Cape Otway Ranges, flows past Geelong, through Lake Connewarre, to the sea at Port Flinders, after draining 1,500 square miles. Its tributaries are, the Moorabool, from the Dividing Range, with its branch Lallal Creek, from Black Hill, Ballarat; and the Leigh or Yarrowee, from the Dividing Range, through Ballarat township, reaching the Barwon 20 miles west of Geelong. The Burrambeet, near Ballarat, falls into Lake Burrambeet.

In Heytesbury of Cape Otway peninsula, south-west of Geelong, are the following streams: the Gellibrand, from near the source of the Barwon to Moonlight Head, 15 miles west of Cape Otway; Ayre and Joanna Creeks, near the Cape; Curdis Creek to the sea, west of the Gellibrand, from Lake Purrumbet; Sherbrook Creek, east of Curdis; Brucknell Creek, from Lake Elingamite, westward to the Hopkins.

Several fine streams run into Port Phillip; as the Yarra, the Saltwater or Marybunong, the Kororoit, and the Werribee or Exe. The Werribee, from the Amphitheatre of the Pyrenees, receives the Mountain Lerderderg at Bacchus Marsh. The Kororoit, from Mount Aitkin, gains the Bay near Williamstown, and Little River at Geelong Harbour.

The Saltwater River rises on the north side of Mount Macedon, and joins the Yarra at its entrance in the Bay, after receiving the Bullanda or Deep Creek at Bulla, the Macedon River below Bulla, and the Moonie Ponds from beyond Broad-

meadows. The Macedon River and the Deep Creek are from the Macedon Range.

The Yarra, 200 miles long, flows westerly to Melbourne and the Bay, from the Mount Baw of the Australian Alps. Its southern tributaries are, the Yarra Rivulet, Woori Yalook, Anderson's, Deep Creek, Koonung, and Kooyongkoot or Gardner's Creek. The northern branches are, the Watts, Steele, Watson, Diamond and Sugarloaf, Plenty from Mount Disappointment, Darebin Merri, and Saltwater. The River Bass falls into Western Port, and the Tarwin into Anderson's Inlet, near Cape Patterson.

The rivers falling southward from the Alps are in Gipps Land. The Albert and Tarra have short courses to a narrow channel, leading from Corner Inlet to Bass's Strait. The Franklin reaches Corner Inlet. The Merriman flows into Lake Denison; the Latrobe, Avon, and Perry, into Lake Wellington; and the Mitchell, Nicholson, and Tambo, into Lake King. Further eastward is the Snowy River, and the Genoa is near Cape Howe.

The Latrobe, or Glengarry, 200 miles long, flows eastward from ranges south of the Yarra. The Mc Alister, from Mount Wellington, falls into the Thomson, the back waters of which rivers form the Flooding Creek. The Thomson then runs south-east into the Latrobe, 10 miles before reaching Lake Wellington. The Avon or Dunlop, from Ben Cruachan, is a small river; the Perry joins it near the lake.

The Mitchell or Mc Arthur, from Mount Kent to Lake King, is 150 miles long. The Nicholson

or Riley is short. The Tambois from Meunt Tambo of the Alps. The noble Snowy River, 400 miles long, rises eastward of Mount Kosciusko, and runs to the sea 100 miles west of Cape Howe; Toonginbook, from Cobboras Range, is its tributary.

LAKES.

The Lakes of Victoria are few in number; some are salt, and others fresh. They are generally very shallow, except where they happen to be the craters of extinct volcanoes, as in the country westward of Geelong.

Gipps Land has a singular net-work of lakes near the coast, which, from their connexion with each other and with the sea, are salt. Those nearest the shore are, Lake Denison, Reeve Lagoon, Lake Reeve, Lake Victoria, Lake Bunga, and Lake Tyers. The others are Wellington and King. Tyers is the most eastern, and Denison the western.

Lake Wellington is 12 miles long by 10 broad, Victoria 30 by 3, Reeve 25 by 1, Bunga 10 by 1, and King 8 by 6. Reeve from the west, and Bunga from the east, meet in Victoria Lake. King opens into the Victoria from the north-east, round Raymond Island; and Wellington into it, from the north-west, through a channel called McLennan's Strait.

The marshy land between Denison Lake and Alberton is liable to be flooded. Floods connect Dennison with Lake Victoria. The lakes are seldom a dozen feet deep. The sea entrance, between Tyers and King Lakes, 50 miles from the west

side of Wellington, is usually blocked up with sand from the southward. Lake Omeo, north-east of Albeton, is at an elevation of 3,000 feet, among the Snowy Alps.

South of Geelong is the large shallow Lake Connemare, opening into the sea, after receiving the River Barwon. To the south-west, in Cape Otway Peninsula, is the fresh-water lake, Elingamite. Fifty miles west of Geelong is the salt Corangamite, 80 miles round. The fresh Colac, 15 miles round, is south-east of the Salt Lake, and salt Gnarpurt north-west.

South-west of Corangamite, and east of Mount Leura, is fresh Purrumbet or Manifold, 2 miles long and 150 feet deep. Salt Timboon or Corungulac, 5 miles long, is west of Corangamite. Weeranganok is east, and Bullen Merri south, of Timboon; both are salt.

Burrumbet, near Lake Learmouth, is in the Pyrenees Mountains, 10 miles west of Ballarat. Boloke, near the Hopkins river, receives Fiery Creek. Banyong Lake is east of the Avon. Mitre and other salt lakes near Mount Arapiles, are west of the Wimmera. Near Belfast are fresh lakes.

Several drainage lakes occur in the flat Murray scrub country, having, probably, subterranean courses to the Murray. Hindmarsh, 30 miles round, near the western boundary, receives the Wimmera, though its waters afterwards fall into Lake Albacuyta northward. Boga is 8 miles from Swan Hill. Salt Tyrrell, 20 miles round, is between Hindmarsh and the river. Baal, 20 miles from the Murray, receives the Avoca River.

BAYS.

Discovery Bay is to the extreme west, receiving the Glenelg River. Portland Bay, 35 miles across, is east of that. Port Fairy is east of Portland Bay. Lady Bay is at the mouth of the Hopkins, at Warrnambool. These four bays have anchorage, but not secure shelter for vessels. Port Campbell is between Lady Bay and Cape Otway; and Apollo and Loutit Bays are between that Cape and Port Phillip.

Port Phillip Bay is 40 miles long, and nearly as broad, having an area of 900 square miles. The entrance between the Heads is 2 miles across. The northern end of the bay is called Hobson's Bay. Geelong Harbour is the south-western part; Corio Bay is the inner bay of Geelong. Just inside the Heads, on the western side, is Swan Bay, of Indented Head Peninsula.

Western Port, between Port Phillip and Wilson's Promontory, is deep and well sheltered. Two considerable islands, French and Phillip, nearly fill up its basin. Anderson's Inlet is east of Western Port. On the east side of the promontory are Refuge and Waterloo Bays, and Sealer's Cove.

Corner Inlet, 15 miles long by 15 broad, is north-east of Wilson's Promontory. Its entrance is nearly closed by Snake Island. Lowis Channel is north of Snake Island, from Corner Inlet, by Welshpool to Port Albert. Port Albert is entered from Bass's Strait, at a distance of 100 miles from the north-east of Tasmania. Shoal Inlet is by Tarraville.

CAPES.

Cape Bridgewater is the eastern limit of Discovery Bay. Nelson is east of it. Cape Sir William Grant, north of Nelson, is near Portland. Cape Otway is 60 miles south-west of Port Phillip Heads, and Volney 15 miles west of Otway. Gray is by Loutit Bay, and Sturt and Patton are south of it. Point Flinders is 6 miles west of Port Phillip.

The Heads of Port Phillip are, Lonsdale Point on the west, and Point Nepean on the east side. Shortland's Bluff is within the entrance on the west side, and Point Henry of Geelong Harbour. Cape Schanck is between Western Port and Port Phillip. Grant is the south-western corner of Phillip Island of Western Port; and Wollomai the south-eastern. Tortoise Head is south of French Island. Settlement Point is on the eastern side of Western Port.

Cape Patterson is east of Wollomai, and Lip-trap east of Patterson. The point of Wilson's Promontory is the most southern of Victoria, and of all Australia. Cape Wellington is on the east side of the Promontory, and Conran near the Beware Reef, Gipps Land.

Pearl Point is east of Lake Tyers, of the Ninety Mile Beach. Everard Cape is 10 miles west of Ram's Head; which is near Cape Howe, the south-eastern point of Victoria and of Australia.

ISLANDS.

Lawrence and Lady Percy's Islands are in Portland Bay; French and Phillip are in Western Port. French, the inner one, is 15 miles long by 10 broad; Phillip is 20 by 7. Glennie and Cleft are west of Wilson's Promontory; Seal Isles and Rabbit are to the east, and Rodonto Rock is to the south.

Snake or Latrobe Island, 12 miles long, is at the entrance of Corner Inlet. Sunday, 5 miles long, is north of it, at the entrance of Port Albert. Lance is between Lake Reeve and the sea, and Raymond between Lake King and Lake Victoria. Gabo, having a lighthouse, is near Cape Howe.

COUNTIES.

Victoria is naturally divided into three parts. The Australian Alps, from the north-east to Western Port, cut off Gipps Land. The Great Dividing Range runs east and west through the middle of the Colony, dividing the level land toward the Murray from the level land toward the sea.

The surveyed and settled portion is almost wholly south of the Dividing Range, and consists of 16 counties.

MORNINGTON, EVELYN, and ANGLESEY are eastward of Port Phillip; BOURKE, TALBOT, and DALHOUSIE, to the north; POLWARTH and HERTESBURY, to the south-west; and GRANT, GRENVILLE, HAMPDEN, and RIPON, to the west. NORMANBY and VILLIERS are by Portland Bay, and

DUNDAS and FOLLET toward the western boundary. The unproclaimed and undescribed county of RODNEY runs toward the Murray.

BOURKE County, with an area of 1,530 square miles, has Port Phillip Bay to the south, the Dividing Range to the north, the River Plenty to the east, and the Werribee to the west. The extreme length from east to west is 70 miles, and width 50. GRANT County, 1,440 square miles, has the Dividing Range to the north, the Werribee and Port Phillip Bay to the east, the Leigh to the west, and the sea to the south. It is 70 miles from north to south, and 40 from east to west.

GRENVILLE, 1,470 square miles, has the Leigh to the east, Lake Colac to the south, the Dividing Range to the north, and Lake Corangamite to the south west. POLWARTH, 1,280 square miles, containing the Cape Otway County, has Grenville to the north, and the sea to the east and south. HEYTESBURY, 1,160 square miles, has Polwarth to the east, and the sea to the west and south.

HAMPDEN, 1,420 square miles, has Heytesbury to the south, Lake Corangamite and Grenville to the east, and the Hopkins River to the west. VILLIERS, 1,660 square miles, has the Hopkins to the east, the sea to the south, and the Eumerella and Normanby to the west. NORMANBY, 1,920 square miles, has Villiers to the west, the sea to the south, the Glenelg river to the west, and the Wannon to the north.

FOLLET, 1,040 square miles, has the Glenelg to the east and south, and the Victoria Western

Boundary to the west. **DUNDAS**, 2,000 square miles, has the Glenelg to the west and north, the Wannon and Normanby to the south, and the Serra Range to the east.

RIPON, 1,820 square miles, has the Serra Range to the west, the Pyrenees Range to the north, Hampden to the south, and the River Burrambeet and Ballarat Diggings to the east.

TALBOT, 1,200 square miles, has the Loddon and Mount Alexander to the north, Mount Cole and Ripon to the west, the Dividing Range to the south, and the Coliban to the east. **RODNEY** County, toward the Murray, between the Goulburn and Campaspe, is not yet circumscribed. **DALHOUSIE**, 1,185 square miles, has the Coliban to the west, the Dividing Range and Bourke to the south, and the Goulburn to the east.

ANGLESEY, 1,780 square miles, has Dalhousie to the west, the Goulburn to the north, the Dividing Range to the south, and the Alps to the east. **EVELYN**, 1,030 square miles, has Anglesea to the north, and Bourke and the Bay to the west. **MORNINGTON**, 1,200 square miles, the Western Port country, has Evelyn to the north, the sea to the south, the Alps to the east, and the Bay to the west.

Several unproclaimed counties form the District of Gipps Land. Of these, **BASS** lies between Mornington County and Franklin River of Corner Inlet. **DOURO** is between Franklin River and the Merriman Creek. **HADDINGTON** has the Merriman Creek and Latrobe River to the west, and the *McAlister* and *Avon* to the east.

BRUCE County has the McAlister on the west, and the Mitchell River on the east. ABINGDON is between the Mitchell and the Snowy Rivers, and HOWE County from the Snowy River to the New South Wales Boundary.

The five great pastoral districts are PORTLAND, GIPPS LAND, the MURRAY, WESTERN or LODDON, and the WIMMERA. The Portland is included now in several western counties.

Gipps Land, containing 14,500 square miles, is between the Alps and the sea, having Wilson's Promontory to the west, and Cape Howe and New South Wales to the east. The MURRAY District, containing 13,400 square miles, has the Murray to the north, the Alps to the east, the Goulburn River to the west, and the Dividing Range to the south.

The LODDON or WESTERN District, containing 6,000 square miles, which includes the prospective Rodney County, has the Murray to the north, the Goulburn to the east, Talbot to the south, and the Avoca river to the west. The Wimmera District, containing 27,000 square miles, through which the Wimmera flows, has the Avoca to the east, the Murray to the north, the Grampian Range to the south, and South Australia to the west.

Victoria is also divided into five Electoral Provinces. The CENTRAL Province includes Melbourne and its neighbourhood. The SOUTH Province includes part of Bourke, and the Counties of Evelyn and Mornington. The SOUTH WESTERN Province includes Grant, Grenville, and Polwarth.

The NORTH WESTERN Province includes Talbot

and Dalhousie, and the District of the Wimmera and Loddon, excepting Rodney County. The EASTERN Province includes Anglesey, Rodney, and the Districts of the Murray and Gipps Land.

The Electoral Districts are, Melbourne—St. Kilda—Collingwood—Polwarth, Ripon, Hampden, and South Grenville—the Murray—Gipps Land—the Wimmera, and the Murray Boroughs. Also, South Melbourne—Richmond—Williamstown—Brighton—Geelong—Portland—Belfast—Warrnambool—Colac—Kilmore—the Kyneton Boroughs—Alberton—Castlemaine Boroughs—Sandhurst Boroughs—North Grant—North Grenville—Anglesey—Dundas and Follett—Normanby—Villiers and Heytesbury.

TOWNS.

Melbourne, the capital, in lat. $37\frac{1}{2}^{\circ}$ south, long. 145° east, stands beside the Yarra Yarra, not far from its confluence with Hobson's Bay, Port Phillip. The population of the town and immediate suburbs is 110,000. Of these suburbs, Collingwood has 22,000, Richmond 10,000, Prahran and St. Kilda 9,000, Flemington 700, Hawthorne 600, Northcote 500. The Port Williamstown, at the Bay, 8 miles from Melbourne, contains 4,000, the Port Sandridge, 3 miles, contains 5,000, and Emerald Hill, between Sandridge and Melbourne, 3,000.

Geelong, the second town of the Colony, on the south-west corner of Port Phillip Bay, 40 miles from the capital, contains with its suburbs 22,000 people. Of these suburbs, Ashby has 3,500.

Chilwell 2,200, Newton 2,200. Irishtown 700, Kildare 800, Little Scotland 800, Germantown 400.

Of the four great thoroughfares out of Melbourne, one is north-east, towards Sydney; one north, to Bendigo and the Murray; one north-west to the Pyrenees, through Balaarat; one south-east, to Western Port and Gipps Land.

The following are the principal townships, and their distances from Melbourne, upon the Sydney road: Pentridge, 5 miles, 2,000 people; Campbellfield, 10; Donnybrook, at the Rocky Water Holes, 20; Kilmore, 1,800 people, 40 miles; Broadford, at Ferguson's, 52; Seymour, on the Goulburn, 200 people, 70 miles; Avenal, on the Hughes, 100 miles; Longwood, on Nine Mile Creek, 120.

Next to Longwood is Euroa, on Seven Creeks, 200 people, 132 miles; Honeysuckle, on Violet Ponds, 155; Benalla, on Broken River, 400 people, 175 miles; Gretna, on Fifteen Mile Creek, 185; Wangaratta, on the junction of the King and Ovens Rivers, 700 people, 200 miles; Beechworth, on Reedy Creek, 230 miles; Belvoir, near the Murray, 250 miles.

Albany, on the opposite side of the Murray to Belvoir, is in New South Wales. Chiltern, on Black Dog Creek, near the Murray, is 25 miles west of Albany. Echuca, opposite to Moama township, is at Hopwood's Ferry, west of Maiden's Punt, by the junction of the Campaspe and Murray. Castle Donnington, by Swan Hill, is at the junction of the Loddon and Murray, 230 miles *north-north-west* of Melbourne.

The main Diggings, or Bendigo, Road has the

following townships: Flemington, 3 miles from Melbourne; Essendon, 8; Keilor, 600 people, 10 miles; Bulla Bulla, on Deep Creek, 18; Sunbury, on Saltwater River, 23; Gisborne, or the Bush, on Macedon River, 400 people, 35 miles; Woodend, on Five Mile Creek, through the Black Forest, 300 people, 48 miles.

Beyond these are Carlsruhe, on the Campaspe, 54 miles; Kyneton, on the Campaspe, 1,300 people, 58 miles; Malmsbury, on the Coliban, 64; Tarradale, or Back Creek, 69; Elphinstone, or Sawpit Gully, 72.

At Elphinstone the road divides; that to the westward leading to Castlemaine, 2,000 people, 80 miles from Melbourne. The Bendigo road, from Elphinstone, passes Harcourt, 80 miles; Ravenswood, on Bullock Creek, 94; Lockwood, 98; Sandhurst, on Bendigo Creek, 7,000 people, 105 miles north-north-west of Melbourne.

The road from Melbourne to the Pyrenees Country passes through Keilor, 10 miles; Melton, 27; Bacchus Marsh, at the junction of the Lerderberg and Werribee, 38; Ballan, on the Upper Werribee, 600 people, 52 miles; Buninyong, 1,200 people, 72 miles; Balaarat, on the Leigh, 2,000 people, 80 miles west-north-west of Melbourne, and 65 from Geelong.

Beyond Ballaarat, on the north-west-road, are Creswick, 92 miles from Melbourne, over the other side of the Dividing Range, from Balaarat; Lexton, or Burn Bank, east of Mount Cole, 400 people, 120 miles; Crowlands, among the Pyrenees, on the Upper Wimmera, 150 miles; Glen

norchy, on the Wimmera, near the Grampian Hills, 180; Horsham, on the Wimmera, 210 miles north-west of Melbourne.

The road south-eastward from Melbourne, conducts across Alpine Regions into Gipps Land, passing Brighton, by the bay side, 7 miles from Melbourne, or Oakleigh 10, to Dandenong on the Dandenong Creek, 20 miles. Corinella is on the eastern side of Western Port; and Franksten, at Snapper's Point, on the eastern side of Port Phillip Bay, 30 miles south-east of Melbourne.

The principal townships near Melbourne, not before mentioned, are, Footscray, on the Salt-water River, between Williamstown and the capital; Braybrook, 4 miles from Williamstown; Northcote, on the Merri Creek, near Collingwood; Broadmeadows, 12 miles north-west; Hawthorne, 3 miles east; Warringal, or Heidelberg, on the Yarra, 800 people, 8 north-east; Templestowe, 12 north-east; Eltham, on the Diamond Creek, 20 north-west; and Kangaroo Grounds, between the Diamond Creek and Yarra.

Off the Sydney Road, from Kilmore, is the road to Heathcote, on McIvor Creek, 80 miles north of Melbourne, through Pyalong, 60 miles. Warranga is 32 miles north-east of Heathcote, and 8 from Murchison, on the Goulburn. Moora and Rushworth are near Warranga.

Mitchellstown, 25 miles east of Heathcote, is at the junction of the Deegay Ponds and the Goulburn. Lancefield is half-way between Kilmore and Kyneton.

Near Bendigo are the following townships:

Mandurang, on the Sheepwash, south; Strathfieldsaye, on the Exe, south; Marong or Argyle, on Bullock Creek, north; Korong, 40 miles north-north-west of Sandhurst; Moliagul, 12 west of Korong; Kingower, south-west of Korong, and Wedderburne, north-west of it; Newbridge, on the Lower Loddon, 30 miles north of Sandhurst. New Bendigo, by the Avon, is 90 miles west of Bendigo.

Near Castlemaine are the following townships:—Guildford, at the junction of Campbell's Creek and the Loddon, 7 miles south of Castlemaine; Fryer's Town, on Fryer's Creek; Muckleford, on Muckleford Creek; Hepburn, by Mount Franklin and Jim Crow Creek; Daylesford, by Wombat Hill and the Jim Crow, 25 south; Newstead, on the Loddon, near the junction of Muckleford Creek, 12 south-west; Maldon, by Mount Tarrengower, 12 west.

West of Tarrengower, 26 miles from Castlemaine, is Carisbrook, at the junction of Greenock and Deep Creeks. Maryborough or Simsons is 4 from Carisbrook and 30 west of Castlemaine. Amherst, by Daisy Hill, is 12 south of Maryborough; Alma, 12 north; Avoca, on the Avoca, 16 west; and Tarnagulla, on Lower Loddon, 40 north-east of Maryborough.

Near Ballarat are Miners' Rest, of Dowling Forest, 7 miles north-west; Carngham, by Lake Burrumbeet, 16 west; Skipton, on Emu Creek, west of Carngham; Chepstowe, by Mount Emu; Streatham, on Fiery Creek, 50 west of Ballarat. Navarre, McKay's, on the Adelaide Road, is 40 miles west of Daisy Hill.

In the neighborhood of Geelong are Wyndham, on the Werribee, half way to Melbourne ; Portarlington, of Indented Head, 20 north-east ; and Queenscliff, Shortland's Bluff, south side of Swan Bay, 20 south-east of Geelong. Layard, to the south-west, is on the Cape Otway river ; and Inverleigh at the junction of the Leigh and Barwon, 25 west.

There are three western rivers from Geelong to Portland : one by Streatham and the Grange ; the second by Cressy and the Grange ; and the other by Colac and Belfast. The first two bear to the northward, and the last southward, of west.

The first or North-Western River passes Fyansford 4 miles from Geelong ; Batesford, 8 ; Bannockburn, on Bruce Creek ; Teesdale, 25 ; Shelford, on the Leigh, 30 ; Rokewood, on the Chain of Ponds, 45 ; Pittfield, on the Woody Yalloak, 60 ; Streatham, on Fiery Creek, 100 ; Wickliffe, on the Hopkins, 130 ; Dunkeld, at Mount Sturgeon, 160 ; Hamilton, on the Grange Burn, 300 people, 185 miles. Portland is 45 miles south of the Grange.

The second or middle Portland road passes Cressy on the Woody Yalloak, north-west of Lake Corangamite, 60 miles west of Geelong ; Lismore ; Darlington, on the Taylor or Emu, 90 ; Mortlake, at Mount Shadwell, 110 ; Hexham, on the Hopkins ; Penhurst, near Mount Rouse, 160 ; the Grange Town is 25 miles north-west of Rouse, and 15 north-east of Braxholme.

The third or lower road, to the south-west of *Geelong*, passes near Buntingdale and Winchelsea,

on the Barwon; Colac, south of Lake Colac, 800 people, 50 miles; Camperdown, by Lake Timboon, 80; Warrnambool, on the Merri, near the mouth of the Hopkins, 1,200 people, 120 miles; Woodford; Belfast, 1,600 people, 140 miles; Yambuck; Portland, 2,200 people, 180 miles west of Geelong.

The Adelaide road from the Grange to Lindsay, on the Border, passes Coleraine on the Wannon, and Dartmoor on the Glenelg. Lindsay or Munro's is 20 miles north-east of Mount Gambier. Nelson is at the mouth of the Glenelg.

The Adelaide road, north of the Grange, reaches Apsley or Ballantyne's, on the Border, south of Mosquito Creek, after passing Balmoral and Mosbyn of the Upper Glenelg. Penola, in South Australia, is between Apsley and Lindsay.

North of Portland are Hayward, on the Fitzroy, 15 miles; and Hotspur, on the Crawford, 30. Digby is north of Hotspur, and Casterton is near the junction of the Wannon and Glenelg.

In Gipps Land are several rising townships:—Welshpool, on Lewis's Channel, 2 miles from Corner Inlet, and 12 west of Alberton. In Port Albert are three townships:—The Port, 180 people; Alberton, on the Albert river, 200 people; Tarraville, on the Tarra, 200 people, 3 miles east of Alberton.

Sale, on Flooding Creek, 150 people, is 50 miles north-east of Alberton. Stratford and Boisdale, on the Avon, are about 12 east of Sale. Rosedale, Black Jack's Hut, on the Latrobe, is 40 miles west of Sale. The Holy Plain is by the Latrobe. *Bushy Park* is near Sale.

Gifford is on the Merriman Creek ; Roseneath on the eastern shore of Lake Wellington ; Strathfieldsaye on the Northern ; and Seacombe on M'Lenan Strait, between Lakes Victoria and Wellington. Bairnsdale is on the Mitchell, near Lake King ; and Burthen, on the Tambo, 20 miles north of Lake King, and 50 east of Sale.

The new road to Sale from Melbourne is as follows :—To Running Creek, 20 miles ; Bryant Creek, 3 ; Woori Yalook, 3 ; Hoddle Creek, 10 ; Latrobe River, 35 ; the Orr, 20 ; Tyer's Creek, 14. The elevation of the road is often 4,000 feet above the level of the sea.

Of these towns, Melbourne, Williamstown, Keilor, and Bacchus Marsh, are in Bourke County ; Geelong, Ballan, and Buninyong are in Grant ; Ballarat and Cressy are in Grenville ; Colac is in Polwarth ; Frankstone is in Mornington.

Woodend, Carlsruhe, Kyneton, and Kilmore, are in Dalhousie ; Carisbrook, Castlemaine, Maryborough and Burnbank, are in Talbot ; Darlington, Mortlake, and Camperdown, are in Hampden ; Coleraine is in Dundas ; Belfast and Warrnambool are in Villiers ; the Grange and Portland are in Normanby.

In Gipps Land, Corner Inlet is in Bass County ; Stratford and Bushy Park are in Bruce ; Alberton and Port Albert are in Douro ; and Sale is in Haddington.

The country was unknown to Europeans till 1798, when Mr. Bass discovered Western Port.

and the strait dividing Tasmania from Australia. Captain Grant discovered Portland Bay in 1800; and Captain Murray in the *Lady Nelson*, entered Port Phillip Bay in 1802. The coast was afterwards surveyed by Captain Flinders, in 1802.

The interior was first penetrated across the Hume or Murray, to Geelong, by Messrs. Hume and Hovell, in 1824. Captain Sturt followed down the Murray in 1830. Sir Thos. L. Mitchell revealed the fertile country to the westward, and named it Australia Felix, in 1835.

The first settlement was made by Governor Collins, with convicts, in October, 1803. They removed from the barren eastern shore of the Bay in three months, and founded the colony of Van Diemen's Land. Western Port was attempted to be settled in 1826. Mr. Batman came over in May, 1836, and the country has not been deserted since. Mr. J. P. Fawkner, in August, 1836, became the founder of the town, afterwards called Melbourne.

The place was a dependency of New South Wales, under Mr. Latrobe as superintendent, till July 1, 1850, when Mr. Latrobe was declared Lieutenant-Governor of the Colony of Victoria. Sir Charles Hotham became Governor in 1854. The gold discovery took place in July, 1851.

The exports for the year amounted to 11,787,226*l.*, of which that of gold came to 8,770,798*l.*, and wool to 1,800,000*l.* The imports were 17,742,996*l.* The expenditure of the Government for 1854 was 4,394,695*l.* The number of sheep in the colony is nearly nine millions.

DISCOVERY AND HISTORY OF VICTORIA.

The first point of land discovered, in 1770, by Captain Cook, Point Hicks, is within the territory of Port Phillip or Victoria, being a few miles west of Cape Howe. Immediately after the settlement of New South Wales, in 1788, attention was paid to coast survey, and Mr. Bass, surgeon of the *Reliance*, accompanied Lieutenant Flinders in an exploring trip from Sydney, in 1798. They had but a boy with them, and their open boat, *Tom Thumb*, was only eight feet long. Rounding Cape Howe, and passing and naming Western Port, they noticed a great swell, which seemed unlike a current from a deep bay, as was then supposed to exist between Van Diemen's Land and the New Holland coast. Bass at once conjectured that the sea ran between, and made Van Diemen's Land an island. They returned for a larger vessel. With six men, and six weeks' provisions, they ventured forth in a whale-boat, and in February, 1789, satisfied themselves of the existence of the strait, now called Bass's Strait. Supplied with the *Norfolk* schooner, of 25 tons, they steered through the strait, and sailed round Tasmania.

The next year Lieutenant Grant, in the *Lady Nelson*, discovered, coming out from England, Capes Northumberland, Bridgewater, and Nelson, Portland Bay, Cape Otway, and Point Nepean. Portland was named after a duke; Otway, a naval captain; Nepean, a secretary to the Admiralty; and Churchhill Island, after a gentleman who gave him seeds and plants for the use of Europeans and savages. At the latter end of the following year, Lieutenant John Murray was sent by Governor King, in the *Lady Nelson*, to survey the southern coast. He entered the heads of a noble bay on February 15, 1802, and named a mountain after Arthur's Seat, Edinburgh. The shores he compared to Greenwich Park. The harbour he called after Captain King; but that person requested it might receive the name of the first Governor of Sydney, Captain Phillip. Ten weeks following, Port Phillip was visited by

the French expedition under Baudin, of the *Geographe*. That navigator called Cape Otway, Richelieu Cape, but only discovered the harbourless coast to the westward, between longitudes 139° and 140° , when he fell in with Flinders, from his South Australian discovery in the *Investigator*. Flinders entered Port Phillip, April 27, and properly surveyed its shore. He complained of its barrenness, and want of water, though he obtained some from a stream trickling through the sands, and near which the first settlement was afterwards established.

On April 8, 1803, David Collins, Esq., Colonel of the Marines, was ordered by the English Government to form a penal station in Port Phillip Bay, with authority to try other places, if necessary. He sailed with the *Calcutta*, 18 guns, Captain Woodruff, and the *Ocean* transport, of 500 tons, having 50 marines, 307 male prisoners, 17 wives, and 7 children. The *Ocean* arrived October 2nd, and the *Calcutta*, October 10th. The party landed on the 16th. about eight miles in from the Heads, on the eastern side. Upon his return to the vessel, after his first visit ashore, Collins said to the chaplain, Mr. Knopwood, 'We observed a total want of fresh-water, and found the soil so extremely light and sandy, as to deny all hopes of successful cultivation.' Mr. Tuckey, first lieutenant of the *Calcutta*, records, "It was destitute of fresh-water." They sank casks in the sea-sand, to receive drainage. A party was sent to explore the country. They fell in with a tribe of 200 natives, decorated with necklaces of reeds, and head-feathers of the swan. Through a mistake a quarrel ensued, and one man was shot. Several convicts made their escape, but most of them were recaptured. One lad, Buckley, was received into a tribe, and lived to see the white man's return, thirty-three years after. The discovery of mica led many to the believe that it was gold, and that they had found an El Dorado.

Colonel Collins wrote unfavourably about the place to Governor King, who sent down the Surveyor General Grimes to report. That report was also unfavourable. Convinced of the ineligibility of the site, orders from Sydney came for the party to leave. A whale-boat was

sent across to Port Dalrymple, the mouth of the Tamar, Van Diemen's Land, to ascertain its suitability. The soil was pronounced unfit. In the meantime a party went overland to Western Port, which they found also a miserable place. As a convict follower had bolted with the bread, the expedition returned very promptly. No fresh water was obtained. Governor King sent orders that the *Lady Nelson*, should, at the Derwent, go across, and bring the people from Port Phillip to that beautiful river. The *Calcutta* had sailed for England, but was captured by the French. The *Ocean* was engaged, with the *Lady Nelson*, for the removal, and the settlement was abandoned on the last day of January, 1804. The historian, Tuckey, exclaims, "The kangaroo seems to reign undisturbed lord of the soil, a dominion which, by the evacuation of Port Phillip, he is likely to retain for ages."

In 1817, Surveyor General Oxley, when on the Lachlan, spoke thus of this southern province: "The country," said he, "south of latitude 34° was uninhabitable, and useless for all the purposes of civilised men."

Twenty years passed, and Port Phillip and its inland country was forgotten. Mr. Hamilton Hume, a colonial-born squatter, residing in the Yass district of New South Wales, undertook, in 1824, with Captain Hovell, to explore the country to the south, in search of new pastures. Taking 6 men, 3 horses, 5 bullocks, 2 carts, and a perambulator to measure distances, they left Appin, October 3rd. Employing their cart for a punt, they crossed the Murrumbidgee, and went four days to the west-south-west. Leaving their carts, they traversed a rough country for 70 miles, and sighted the Snowy Alps. Coming among the spurs of that range, they steered to the west, and after 85 miles' walk came to a fine river, which they called the Hume—the head quarters of the Murray. Thirty-four more miles brought them to the Ovens, called after the Governor's secretary. Turning southward, for 109 miles, they crossed the Hovell or Goulburn. A south-west course brought them again among the mountains, and compelled them to take a north-westerly direction for 25 miles. They saw Mount Macedon, and named it after

Mr. Wentworth. Another southerly course brought them, December 16th, to the sea-side, at a bay called by the natives Geelong. Hume considered this part of Port Phillip Bay, but Howell contended it was Western Port. Want of provisions forced them hastily homewards. Though they saw good land, yet the approach to it was considered wholly impracticable. A course a little more to the westward would have given them a better road. From the supposed good land near Western Port, Captain Hovell was sent in a schooner to examine the place, and in 1826, a military party with some convicts were sent there under Captain Wright. They were stationed at the east side, not far from the present township of Corinella, about one mile north side of Red Point. Want of water and bad soil compelled them to abandon the locality in December, 1826. The bad character of Port Phillip District was thus unchanged.

Nine years after, in 1835, Major Mitchell, the scientific Surveyor General of New South Wales, undertook an expedition to the southward. He crossed the Murray, June 13th, and came to a river five days after, which he called the Yarrayne, now the Loddon. Making a bridge to cross, he found in the morning that a flood had covered it five feet. Crossing the Wimmera, he approached the Grampian Range. Ascending Mount Williams, he endured much from cold; the sticks of his night fire were glowing at one end, and freezing at the other. Passing Arapiles and the Mitre Lake, he gained the banks of the beautiful Glenelg River, which he so named from the English Secretary to the Colonies. He entered the limestone caves, and, leaving the Victoria western boundary, rode eastward to Portland Bay. Greatly surprised at a shoe foot-mark in the sand, he followed the track, and came to Mr. Henty's whaling station on the Bay, August 29th, which had been there established three years. The volcanic cones of Napier, &c. were seen on the way to Mount Cole. Crossing the Campaspe, not far from Tarrangower, the Major stood on Mount Byng, afterwards Alexander, and noticed in its neighbourhood the peculiar slate formation, now found to be auriferous. Again turning to the



Dividing Range, the explorer ascended a mountain, from the top of which he saw Port Phillip Bay, and the hill above the Campaspe also. He connected the three, by calling one Mount Macedon, the Greek kingdom of Philip, and the other Alexander, from King Philip's son. The fertile country surveyed from this point greatly delighted the traveller. Well might he call the region, *Australia Felix, Australia the Happy*, and proudly did he exclaim, "We had at length discovered a country ready for the immediate reception of civilised man, and fit to become one of the great nations of the earth." Leaving Macedon, September 27th, Mitchell crossed the Goulburn, and arrived at his Sydney home, on November 3rd. His aboriginal companion, Piper, was decorated with a red coat, hat, and feather; and around his neck was suspended an engraved plate, proclaiming him the "Conqueror of the Interior."

The pasture-lands of Tasmania were overstocked, and longing eyes were often cast across the strait, with wishes that something better than sandy wastes were there. The report of Major Mitchell promised all that was required. Governor Arthur, of Van Diemen's Land, sought the extension of his province. John Batman first proclaimed the existence of fertile land near the Bay of Port Phillip, first organised a party for its settlement, and became the real founder of the Colony of Victoria. A settler of Van Diemen's Land, he organised an association of fifteen gentlemen of that island to establish sheep stations at Port Phillip. This association consisted of Messrs. Batman, Swanston, Bannister, Simpson, Gellibrand, Arthur, J. and W. Robertson, Wedge, Sinclair, Callicott, Cottrell, Sams, Connelly, and Mercer. Accompanied by a few white men, and his seven Sydney blacks, he sailed from Launceston, May 12th, 1836. He landed on Indented Head, May 26th. Following the aborigines for ten miles, he came up to about a score of women and children, to whom he gave presents. Returning on board, he waited six days, and then again sought the men. He found a party *on the Werribee*. Exchanging weapons he soon became *friendly* with the chief. He managed to explain, through

his Sydney natives, that he wanted to buy land of them, to which to bring his wife and seven daughters. A regular deed was drawn up, and signed by eight chiefs, on June 6th, by which they ceded 100,000 acres. Another agreement was made the same day, for 500,000 more, being a district 50 miles long, from Indented Head, by Geelong Bay, up to Merri Creek. The consideration consisted of tomahawks, flour, clothes, &c., and the annual tribute or rent was to be 100 blankets, 100 knives, 100 tomahawks, 50 scissors, 50 looking-glasses, 50 red shirts, and 5 tons of flour.

Batman departed, June 14, for Launceston, leaving three whites and five blacks in charge. A day or two after a tall man, of a lighter colour than a native, approached the strangers, and seemed to wish to say something, without being able to do so. He showed W. B. marked on his arm, and at last said the word "bread." Gradually his language returned, and they learned that his name was William Buckley, the runaway lad from Collins' camp, in 1803. His object in coming was to tell them of the design of the natives to kill them, in order to get at their stores. However, he persuaded his black friends to wait till the big boat came with more flour and knives, and so saved his more civilised countrymen. When Batman returned, he took Buckley for his interpreter, and shortly after Governor Arthur sent over to him his free pardon. He subsequently became servant to Captain Lonsdale, and is now a Government pensioner in Hobart Town.

The authorities interfered with Batman. Mr. Montague, Colonial Secretary of Van Diemen's Land, warned him in a letter, dated July 2. Our founder ably defended himself and the principles of his action. He mentioned that, with Mr. Gellibrand, he applied to Governor Darling, in 1827, for permission to settle stock on the southern coast, but received reply that the land required was out of the New South Wales territory. Governor Arthur wrote to the Home Government, July 4, advising the new settlement to be placed under the jurisdiction of Van Diemen's Land, and suggesting the gift of a grant of land to Mr.

Batman, as a reward for his enterprise. Afterwards he wrote to Lord Glenelg, urging that this fine country ought not to be appropriated to a sheep-walk for absentee proprietors. Governor Bourke issued his proclamation from Sydney, August 26, against persons treating with natives, and declaring the boundary of his Government to be from Cape Yorke to Wilson's Promontory, and from the sea to long. 129° E. Mr. Mercer wrote to Lord Glenelg, requesting a grant for the Association of 750,000 acres, at a quit-rent of £1,300 a year, and £320 a year to the natives. The British Minister replied, that the land would be put up to auction, at a reduced rate. Subsequently the association were allowed the 5s. an acre upset price upon 28,000 acres near Geelong, equivalent to a grant of £7,000. At the auction sale they paid about a shilling an acre over that price. The Association sent over none but married men of good character. They organised a complete system of religious teaching and schools. Unable to carry out their objects, they dissolved partnership. Mr. Batman died in Melbourne, May 6, 1839, aged thirty-nine years.

Mr. John Pascoe Fawcner had the honour of founding the settlement of Melbourne. He happens to be the only person in Victoria who originally belonged to the first colony of Port Phillip, having been a lad in Governor Collins' fleet, in 1803. Anxious, like others, to take part in the settlement of the southern shore, he co-operated with Captain Lancey and Messrs. George Evans, William and Samuel Jackson, and Hay Marr, and sent off the *Enterprise* schooner of 50 tons, with stores. Illness prevented his sailing then. The vessel proceeded first to Western Port, and reached Port Phillip on Saturday, August 17th, and the mouth of the Yarra on the 29th. Batman heard of this, and came to warn off the intruders early in September. Before this, Mr. Aiken had brought over sheep from Tasmania. Mr. Fawcner did not come across himself till October 11th. The same season he had *nine acres* in crop, near the site of the wharf, and afterwards *eighty acres* under Emerald Hill. He was not so *fortunate* as Mr. Batman, in getting compensation from

Government. Mr. Fawcner opened the first hotel and store, and commenced a manuscript quarto weekly paper, called the "Advertiser," which afterwards, in a printed form, became the "Patriot."

The early settlers framed some rules for public order, In June, 1836, Mr. Steward, Magistrate of Goulburn, was sent to report upon Port Phillip. In consequence of that report, Captain Lonsdale arrived as Commandant, October 1st, 1836, in H. M. S. *Rattlesnake*, Captain Hobson, after whom the bay near Melbourne was called.

Mr. Latrobe, the Superintendent, did not arrive till October 1, 1839. The condition of the aborigines received great consideration. Protectors were appointed, and a mission at Buntingdale was established the first year. Governor Bourke came to the Yarra in April, 1837. Melbourne was proclaimed May 19th; and the first land sale took place on June 1st. 100 town half acre lots fetched from £7 to £95 each. One purchased by Mr. Fawcner for £70 was sold two years after for £1000. The sales were for some time in Sydney. The first at Melbourne was in June, 1840, when the sum of £100,000 was obtained. These land sales indicate the monetary condition of the early years of the colony. In 1837, the town land realized £3712; no country land was sold. In 1838, the amount for town land £1400 and country £25,000. In 1839, £9,000 and £51,000; in 1840, £82,540 and £154,000; in 1841, £2,716 and £63,000; in 1852, only £729 town, and £2,000 country lands. The exports and imports furnish another gauge of the condition of the colony. The imports were greatly in excess during the speculative years, but were checked as in 1854 from the same cause. They were respectively as follows:—1837, exports, £12,000 and imports, £109,000; 1840, £154,600 and £392,000; in 1843, the imports were reduced to £120,000; in 1845, the exports were much in excess, being £342,600 to £205,000 imports. The population in June 1837, was 250; in 1838, 1,800; in 1839, 3,000; in 1840, 5,500; in 1841, 11,750. Melbourne contained 4,500 in 1851, 11,000 in 1846, and 23,000 in 1851. In 1838, flour was

£85 a ton; hay £20; and potatoes £10. Wages for some time were very high. In the panic years of 1842 and 1843 there was great distress.

Although Mr. Fawcner had at first a sort of manuscript news, and subsequently got up a roughly printed one, the *Port Phillip Gazette*, brought out by Messrs. Strode and Arden, October 23, 1838, was the first legalised newspaper. The *Herald* and *Geelong Advertiser* appeared in 1843. The *Fire-fly* steamer arrived in 1838. The first vessel from England direct visited Melbourne in June, 1839. In 1839, there was two schools, six religious teachers, twelve doctors and five lawyers. In 1843, flour was £50 a ton, and mutton sevenpence a pound. In that year a corner allotment of Swanston and Little Collins Streets sold for £6 a foot frontage. The first twenty acres of Portland township sold for £11,000. Application was made to Government in 1852 to work the coal mines of Western Port. In 1843, there were in Port Phillip 5,000 horses, 140,000 cattle and 2,000,000 sheep. Sheep fell in price from 40s. and 50s. to 2s. and less. In 1846, the squatting licences were declared to be for 14 years, with pre-emptive right; twenty square miles being allowed for a station. A pound was annually paid a 1000 over 4000 allowed on a station, in addition to the ten pounds rent. In 1849, the revenue nearly doubled the expenditure. The colonists earnestly sought separation from New South Wales. Their six representatives were Sydney people, because the council met in that city. Independence was obtained July 1, 1850, when Mr. Latrobe was declared Lieutenant-Governor of Victoria.

Within a year of the independence of Victoria, a new era commenced in her history. The richest gold-fields were discovered in the country. Although in 1840 gold was brought from the Alps by Count Strzalecki, in 1841 from the Plenty, and a few years after from the Pyrenees by a shepherd, yet no regular search after it took place until its discovery by Mr. Hargraves in New South Wales, in February, 1851. Mr. Campbell observed the metal in the *rocks of Clunes*, in May, 1850, but kept the secret.

Mr. Michel and his company, in June, 1851, found it on Anderson's Creek, and published it on July 5th. Dr. Bruhn wrote an account of it August 15. Mr. Esmonds took gold from Clunes in July. Mr. Hiscocks made known the Ballarat diggings on August 10. A letter from Kyneton announced the Alexander Field, September 20. Bendigo opened its treasure chamber in December of the same year. The auriferous tokens, the north and south strike of the slate and quartz reefs, were noticed by Major Mitchell in 1836, on the banks of the Coliban and Avoca. The first year, 1851, the export of gold was 145,137 oz.; in 1852, 1,888,526 oz.; in 1853, 2,497,720 oz.; in 1854, 2,192,700 oz. In half of 1855, 1,182,810 oz.

The effects of the gold discovery are interesting to notice. At first, the rush of men from the towns and farms of Port Phillip and the neighbouring settlements, brought on a paralysis of trade, and depreciation of prices and much distress throughout the colonies. The reaction was as sudden as brilliant, property rose in value, and a joyous spirit prevailed. A vast influx of population followed from all parts of the world. Speculation in land and produce was all prevalent. Enormous shipments of goods took place, the markets were overstocked, competition in business was great, the consequence of overstocking became apparent, and low prices with a checked commerce ensued. Depression and insolvency succeeded in 1854. Another oscillation of the commercial pendulum is now bringing new prosperity. The exports are again in excess, in considerable excess, of the imports; and by the exercise of common prudence, the colony of Victoria, with her vast gold fields, fertile lands, and fine climate, will become richer and happier than before.

The exports and imports illustrate the times. The exports for 1850, were £1,041,796, and the imports £744,925; for 1852, £7,451,549 and £4,069,742; for 1853, £11,061,543 and £15,862,637; for 1854, £11,787,226 and £17,742,996; for 1855, to August 18th, £7,695,651 and £6,354,958. The revenue of the

Government for 1850, was £259,432, and the expenditure £196,460. The revenue and expenditure for 1851, were respectively, £499,641 and £410,864; for 1852, £1,635,494 and £981,566; for 1853, £3,068,138 and £2,940,426; for 1854, £3,349,300 and £4,394,695. The year before the diggings, there were 52,176 acres in crop; the year after the discovery, only 36,662. Bad times drove many to the plough. This year it is thought there will be very many acres in cultivation. In 1852, the Government sold 257,000 acres; in 1853, 330,800; in 1854, 404,472. In the unsettled country there are 16,000 horses, 450,000 horned cattle, and 5,250,000 sheep. The population has progressed from 80,000 before the gold discovery, to 300,000 at the present time; one-third of whom are at the diggings, and one-third in Melbourne.

Education has also progressed under the fostering care of Government. In 1852, there were 54 public schools, and 99 private ones; in 1853, there were 89 Denominational, 9 National, and 17 private schools, having 7,850 children. In 1854, the Denominational schools were 132, and National 25. In 1855, the Denominational Board of Education had 306 schools and 16,500 children, and the National 57 schools and 4500 children. The sum voted for the schools in 1854, was £100,000. Morals have not improved by the gold discovery. Intemperance is the prevailing vice of all the colonies. The Government granted in 1854, the sum of £36,180 to be divided amongst various Christian bodies. In 1855, the Church of England have about 100 places of worship, the Roman Catholic 45. The Church of England have 48 ministers, the Roman Catholic 32, the Wesleyan 17, the Free Church of Scotland 15, the United Presbyterian 18, the Church of Scotland 10, the Independents 15, the Baptists 6.

Victoria is, like the other colonies, governed by a Governor, an Executive Council, and a Legislative Council. The Executive consists of the Colonial Secretary, Attorney General, Colonial Treasurer, Collector of Customs, and Auditor General. The Legislative Council has 36 representative members, and 18 nominees. By the New Con-

stitution, the influence of the Crown, or Governor, in the Council will be diminished.

GEOLOGY OF VICTORIA.

The agricultural qualities of the country greatly alter according to the relative position with the Great Dividing Range and the Alps. The land between the Murray and the mountains is as indifferent as that between that range and the sea is good. Generally speaking, the soil near the hills is poor and heavily timbered. The sandstone plains on the north side have few trees, and little grass and water. The limestone region to the north-west, and along the western boundary is very scrubby and barren. The basaltic plains to the south and south-west, and the basalt or ironstone localities of Kyneton, Kilmore, Bacchus Marsh, &c., are productive and valuable. On the other hand, slate and granite districts are inferior. Little good land is found near the gold-fields.

The County of Bourke has good farms in Pentridge, Somerton, Keilor, Heidelberg, &c. East and south-east of Melbourne the soil is sandy, and to the north and west of a fertile clay. Mornington County is either swampy or sandy; Evelyn, rocky and thickly timbered; Dalhousie, mountainous and indifferent, excepting near Woodend, Kyneton, and the Goulburn; Talbot, also hilly and poor, excepting on the Trappean Loddon Plains, and the banks of rivers. Ripon is a rocky county; Hampden has large and excellent grazing plains; Dundas is rocky and poor to the east, flat and poor to the west and north, but fertile to the south. Normanby has good soil to the north, south and east, but is sandy and poor to the west—it is remarkably productive on the Wannon and Grange Burn. Villiers is swampy to the west and north, but fertile to the east and south—the banks of the Hopkins are very fine. Heytesbury and Polwarth, the Cape Otway country, are

little known and lightly esteemed; there are barren, scrubby, sandstone ranges, with occasional belts of grass tree swampy flats; the Stony Rises are north-east of those counties.

The scientific surveyor Mr. Skene gives the following account of the physical geography of Grenville county:—Open plains, 1,018 square miles, and timbered country, 452. He describes the grazing lands as comprised in 1,202 squares miles, the agricultural in 84, and the barren ranges 184. The same gentleman speaks of Grant County containing 1,277 of timbered country, and 423 open plains. Of these, again, he regards 984 as grazing land, 618 agricultural, and 103 barren. The Ovens district is mountainous and barren in one part, and flat and swampy in the other. Good land is known on the Broken River and Devil's River. Gipps Land is a favourite portion. Shut in between the sea and the Alps; accessible in all weathers for all vessels, by the port of Welshpool, it is a province of itself. The north, west, and east, are rocky and timbered. Along the coast the land is flat, liable to floods, and scrubby, but occasionally very rich. Between that region and the hills is a belt of magnificent country, well supplied with running streams, and having a delicious climate. It is less favourable in soil about Welshpool and Tarraville than about Alberton. Wilson's Promontory is hilly, but splendidly timbered. Western Port is swampy, scrubby, and sandy. In Victoria the proportion of agricultural land is greater than in any of the Australian colonies.

The Geology of Victoria is of a varied and interesting character. The Australian Alps are principally of granite, though there are great masses of slate, quartz, porphyry, &c. The Gibbo Range contains much quartz, with some argentiferous lead ore. The Buffalo and Fullers Ranges are of granite. The Ovens district is chiefly granitic, with auriferous slate and quartz. The sands of those mountain rivers are rich in oxide of tin as well as gold. The Indi River, or source of the Murray, abounds in quartz gold. The Omeo plains are basalt, surrounded by

auriferous alluvial deposits. The Mitta River dashes over romantic looking basaltic rocks, which sometimes assume the appearance of frozen cascades, in three, five, and six-sided cylindrical prisms. The natives never ascended high mountains from a fear of yellow smoke and boiling chasms. Gipps Land is of crystalline rock to the north, and recent tertiary or Murray fossiliferous limestone along the sea shore. The flats are of similar limestone. Wilson's Promontory and the neighbouring islands are of granite. Between the Promontory and Liptrap is slate, succeeded by blue fossiliferous limestone, near a deposit of iron sand. The Cape is of serpentine.

From Anderson's Inlet, past Cape Patterson, to Bass River of Western Port, is a course, rotten, soft limestone and conglomerate, with fossil wood. This is the formation with which the Western Port coal is associated. There are four sites of this mineral in Victoria, namely—Barrabool Hills, near Geelong; Deep Creek of Bacchus Marsh; Cape Otway Country, and Western Port. The Barrabool is a small basin, from which little coal has yet been obtained. The seams are thin. The rocks are fine-grained sandstone, and a blue claystone. Though surrounded by basalt, no dykes are seen in the field. A bituminous shale or slate, covered with basalt, was found three miles from Bacchus Marsh. North of Cape Otway, and between it and Port Phillip Bay, are many coal localities. At Apollo Bay it is a jet. Many seams of lignite are observed near Loutit Bay, in a silicious sandstone. This formation is much disturbed by trappean dykes. The Western Port coal measures extend along the south-eastern side, round by Cape Patterson, to the Tarwin River. These are constantly interrupted by basaltic veins. As elsewhere, the coal, which is highly bituminous, rests on slate, and immediately beneath the tertiary series. One pit, sunk in 1840, gave the following results:—Blue clay 3 feet, yellowstone 11, clay 10, coal 3, clay 9, coal 3, rotten stone 6, coal 5. Near Cape Patterson is a seam 6 feet thick, of first-rate mineral. The Queen's seam, 4 feet, is below high water mark. Some doubt exists as to

the permanent thickness and extent of these veins. In 1840, the coal was discovered 12 miles from any loading place in the Bay; a fossil tree, 20 feet long, was observed there. Fifteen years ago a company sought to work this mine. Occasionally there are seen over the coal in the soft sandstone silicious balls a foot in diameter.

The north side of Western Port is of quartz and quartzose sandstones. Much blue clay is near the Great Swamp. The east side of the Port is of recent sandstone with intrusive greenstone, and the western coast of dark, hard basalt and quartz. The basalt contains fine calkspar crystals. French or Inner Island, of Western Port, has trappean basalt to the north; sandstone, conglomerate, and coal to the east; basalt to the south; tertiary sandstone to the west. Phillip Island or Grant has recent sandstone on the north; basalt to the south and west; and pink granite to the south-east. Cap^e Wollomai is a granite of green mica and red felspar. Flint pebbles are washed up on the southern shores of the Port. Arrongonite, quartz pebbles, and red ochre are found at Nobby Point, Phillip Island. Cape Schank Country contains slate, porphyry, calcareous spar, and basalt. On the basalt is a concretionary or root limestone, which is doubtless produced by the percolation of rain water with the lime from shells, among the sandy shore. There are good specimens of mammilated hæmatite of iron. A granite of white felspar and yellow mica occasionally shows itself.

The Peninsula from Cape Schanck to Point Nepean of Port Phillip exhibits a series of sand hills, with a rough, earthy, fossiliferous recent limestone. The lime occurs in occasional lumps in the sand, which are extracted for burning. The sandy cliffs have thin bands of this recent limestone. This limestone of the Port Phillip Heads is similar to that of the Murray, containing the fossils of the Nautilus, Turritella, Erata, Cypræ, &c., with coral and fossil wood. A good freestone is wrought at Point Nepean. South-east of Port Phillip Bay is the granitic *Arthur's Seat*. A bed of tertiary clay divides this from

Mount Martha, which consists of slate, granite, and basalt. A ferruginous sandstone cliff, near Mount Martha, 200 feet high, is of mottled sands with bands of pebbles. There is also a good building stone of quartz grit conglomerate. Near Martha is a basin of tertiary blue clay, containing fossils of the *Murex*, *Turretella*, *Terebratula*, *Patella*, *Nautilus*, and Coral. Greenstone dykes are in the neighbourhood. Basalt and blue clay divide Martha from Mount Eliza. Carrum Swamp is north of Eliza. North of the swamp are the recent formations of Brighton, St. Kilda, and Prahran, consisting of fossiliferous and horizontal sandstone beds, coarse quartz grit, clays, and a fine conglomerate of building stone. The underlying slate sometimes crops out. At St. Kilda is a white sandstone, with white mica in the joints. The titaniferous iron sand of Brighton contains 70 per cent. of pure metal. Sandridge is of very recent formation. Between it and Melbourne is an upheaved estuary of sand and clays, resting on red tertiary sandstone.

Melbourne stands on a slate formation, which is often violently and curiously contorted. An auriferous gravel in one part and clays in another form the upper stratum. Gypsum is abundantly found in the adjoining swamp, which is conjectured by Mr. Blandowski to have been once the crater of a volcano, filled up with recent deposits. On the north, west, and east sides of Melbourne is the dark basaltic rock, or bluestone of colonists. Though this covers Richmond and Collingwood Flats, the slate floor re-appears on Richmond and Collingwood Hills. The same trappean basalt extends south-westward along the Bay shore, across the Saltwater River to Williamstown, and so onward toward Geelong, forming large treeless plains. It is thought there were two irruptions of basalt, according to Mr. Smyth, between which is a quartz gravel bed, on the road from Melbourne to Flemington. The latter place is on a tertiary ferruginous rock, containing *Turretella*, *Typolites*, &c. There is also basalt, soapstone, and valuable hæmatite of iron. A recent sandstone reposes on old basalt at the Saltwater River, and upon

that is another volcanic coating. Crossing the Yarra from Collingwood Flat we leave the basalt, and tread upon the slate of Boroondara. In most parts of that beautiful and hilly district the slate is covered with thick beds of gravel, which is sometimes of rounded masses of quartz, at other times of shot-like particles cemented by pressure into a sandstone; but it is in many parts covered with clay and sand. The basalt and slate are in like manner divided by the Darebin Creek. The slate of Boroondara, by the Yarra, has the meridional direction, and is intersected by quartz veins, as well as accompanied by parallel bands of quartz, as on the diggings. Without doubt the gravel is auriferous.

The river Yarra Yarra runs through a slate and granite at first, and then through the slate and quartz of barren Yerring and Warrandyte. In the slate of Upper Yarra are found the Tribolite, Echinus, Crustacea, &c. The auriferous rocks become more manifest on Anderson's Creek. A band of calcareous breccia there contains coralline zoophyta. Mr. Aitcheson discovered a remarkable coralline vein, fifteen inches wide, Upper Yarra, between layers of hard blue inclined slate, abounding in microscopic fossils. There are minute Encrinites and moss corals. The formation is of the lowest Silurian. This appearance in an auriferous locality is very curious. Mr. Selwyn speaks of a cave of crystalline limestone, eight miles from the Yarra, leaning against basalt, which has elsewhere, by contact, converted sandstone into quartz. The Diamond, Darebin, and Plenty rivers rise among crystalline mountains, but flow chiefly through basaltic plains. The Yan Yean Reservoir, for supplying Melbourne with water, is fed from the Upper Plenty streams. At Broadmeadows the slate appears under the trap. The sandstone of Moonee Ponds contains the fossils of the Encrinite, *Orthis*, *Lingula*, *Trilobite*, *Orthoceras*, &c. Basalt covers the Keilor Plains, forming columnar cliffs one hundred feet high, beside the creek. Tertiary gravel is presented between the basalt and slate at Keilor.

Geelong is surrounded by a field of basalt, which covers

a marine limestone, forming cliffs by the Bay side. Mr. Orlebar noticed a freshwater limestone in its vicinity, and speaks of a basalt conglomerate, cemented by lime containing fossil shells. A yellow and a white sandstone occur near the town. Portarlington, at the entrance of Geelong harbour, is on a magnesian limestone, which, with some interruption, extends up to the granite Station Peak, and averages, according to Mr. Skene, half a mile in width. Brisbane Range, the source of Little River, is of slate, skirting Station Peak. Boulders of trap strew the limestone shore at the mouth of the Barwon. The Werribee rises in a basaltic country, falling over a trap rock of fifty feet. It receives the Lerderberg coming through a slate defile, 700 feet deep, over very thick slate debris. The Moorabool flows through the Derrimut basalt and slate country. In Derrimut district is a low limestone ridge. The Moorabool branch, Lal Lal, has a fall over basalt columns, 112 feet high. The Leigh separates the basalt western country from the slate one. Slate prevails from the trap at Sunbury on Macedon river to the trap Mount Blackwood. Mercer's Hill, by the Leigh, is of quartz and slate, near basalt, containing copper, lead, and gold. The Anaki Hills are volcanic; an imperfect crater may be seen. Mount Moriac is of basalt; and Coloite, at the entrance of Lake Connewarre, of recent limestone. Mr. Skene thus sums up the geology of Grant County:—Auriferous schists, 54 square miles; slate, 220; granite, 32; lime, 19; sandstone, 35; basalt, 1,340.

The Cape Otway country comprises the counties of Heytesbury and Polwarth, south-west of Geelong. It is a district of rough, scrubby, sandstone ranges, containing silicified trees, and presenting on the eastern sea-coast considerable traces of coal, extending from Addis Bay to Airey's Inlet. Large blocks of magnetic iron are gathered on the beach. Greenstone occurs at the Cape. Ten miles west of the Cape are stalactitic limestone caves. Similar caves are northward, near the Stony Rises. On the coast are horizontal beds of sandstone and limestone, with

recent marine fossils. The cliffs near the Gellibrand are 200 feet high, in the neighbourhood of the celebrated fossil clay cliff. From the shore northward to Mount Leura are deep deposits of marly clay and loam. Limestone stalactites may be seen at Apollo Bay.

Westward of Geelong the country is principally basaltic. Gellibrand, Hesse, and Warrion, in Grenville, are volcanic cones. The plains are often covered with small pebbles of glossy ironstone, and fragments of porous ferruginous sandstone. According to Mr. Skene, the surface of Grenville county shows 39 square miles of auriferous rock, 18 of granite, 375 of slate, and 1,037 of basalt. The wonderful basalt and porphyry Stony Rises are scattered over many miles to the southward and southwestward of Lake Coranganite, and between the Emu and Hopkins, being partly in Heytesbury and partly in Hampden counties, surrounded by a basalt country. Mount Powdon rises in the middle 500 feet. Some imagine they observe a large crater. There are many volcanic cones around Leura. Lake Purrembete, 150 feet deep, is doubtless an extinct volcano. The limestone formation appears at Mortlake, surrounded by basalt. Granite obtrudes west of trappean Timboon. A beach of lava is spoken of near Lake Colac. The neighbourhood of Warrnambool is limestone; north of it the barren sandstone is seen. Ridges of basalt pierce through the western recent limestone; as, on the Shaw and round Portland Bay. There is a limestone cave at Bridgewater 50 feet deep, ornamented with droll but artistic sketches of aborigines, native animals, &c. The stalactitic caves of the Glenelg are very beautiful; the limestone there contains the Pecten, Echinus, Ostrea, Formanifera and Coral.

This recent limestone extends northward to the Murray along the boundary, and for four hundreds of miles along the stream. A sandstone floor connects the limestone region with the mountainous parts. Several granite hills rise from the plain; as, Hope and Pyramid; the rock of Mount Hope is a white felspar and black mica. Further particulars of Murray limestone are to be found under the *head of South Australia*.

The Dividing Range is between the Murray limestone and sandstone country and the basaltic southern plains. The rocks are crystalline. The basis is slate, but the alternations of granite, quartz, and basalt are frequent and extensive. The trap is found on both sides of the range. It is abundant on the sources of the Yarra; forms the country between Kilmore and Lancefield; covers part of the Macedon ranges; appears in many volcanic cones north of Ballarat; and connects the granite Mount Misery with the Pyrenees. Slate is prominent in the Dandenong and Plenty hills, though often pierced by granite. It forms the countless rises of Black Forest and the Kilmore ranges, and is the prevailing rock of all auriferous districts at a very inclined angle. Fossils are frequently met with in these ancient schistose formations. Passing over the auriferous rocks of the eastern Pyrenees, we have a short interval of granite, when the slate and quartz are presented in great force around the Amphitheatre; the centre of which, however, is of trap and granite. Further to the west is the giant Cole, followed by the golden rocks of the Avoca. The granite head of Ararat rises from the slaty country at the source of the Wimmera.

The bold Black Range is the great north-eastern spur of the Dividing Chain. With grey granite at the foot, and much kaolin or decomposed felspar, the black and the smoky quartz is a striking feature. Black tourmaline is plentiful, as well as phonolite or clinkstone, of which the native axes were made. The north side of Macedon range is granite; slate, quartz, porphyry, syenite, clinkstone, iron ore, also are observed. To the west of it are many singular basaltic piles, 20 feet high, composed of stones, says Mr Blandowski, convex at the base, concave at the top; this place was the favourite resort of the aborigines. At the foot of Mount Macedon appears an extinct volcano with trappean veins. Mount Diogenes, or Dryden's Monument, near Macedon, has been well described by Mr. Blandowski. A perpendicular wall of dolerite rises before it; and at the foot of it are vast numbers of basaltic pyra-

midal columns, from 15 to 20 feet in diameter, and from 30 to 100 high, containing many hollow concretions filled with a fine soft earth. In 1846, in the marsh by Mount Macedon, in a black soil and yellow clay, were found animal marsupial fossils like those of Wellington Cave in New South Wales; the Kangaroos were larger than any now existing.

The Grampian Hills are of a silurian slaty sandstone. Phonolite is found on Mount Williams; crystallised sandstone on Abrupt; micaceous sandstone on Zero; ferruginous quartzose sandstone on Sturgeon; quartzose conglomerate on Mitre Rock; and quartzose sandstone on Arapiles or Choorite. Between Sturgeon and Mount Eckersley the country is basalt. The source of the river Loddon is among volcanic cones; it then flows for many miles through an auriferous country, until it reaches the plains. The Loddon Plains between Castlemaine and Maryborough are covered with basalt; the golden gravel doubtless, lies between this and the slate. Trappean basalt is the prevailing formation along the Greenock and Deep creeks of the Loddon. At Carisbrook the slate is on the western side of the Deep Creek, and the basalt on the eastern. The Upper Avoca has the quartz and slate on both sides for 50 miles. The Campaspe has a long course through basalt. At its junction with Piper's Creek there are basaltic columns 250 feet high. Granite is the rock of Piper's Creek. The Coliban, likewise, runs in a trap district, till it approaches Mount Alexander, when the banks are of granite. Slate is at its junction with Myrtle Creek. Mount Franklin of Jim Crow Creek is of basalt, near limestone.

Taking the Melbourne road to Bendigo, the traveller journeys over basalt to the granite banks of the Deep Creek, 20 miles distant. Trap follows this, succeeded by quartzose sandstone, and that again by trap, to Gisborne. The Black Forest is slatiform. Excepting where slate and quartz occasionally appear, the basalt prevails from Woodend to Tarradale, where the auriferous rocks present themselves. Near Carlsruhe the basalt is north,

west, and south; the slate and quartz, east; and granular quartz, north-east. Granite is beheld south and east of Kyneton, the basalt region; but through this trap the slate and quartz often are observed.

Malmsbury is basalt. Granite extends from Stratford Lodge, on the Coliban, to the slate of Elphinstone. With the exception of the trap on the Exe, the district between Bendigo and Mc Ivor is a slate one. Between Kyneton and Kilmore is the mountain Lancefield district of basalt on slate, bounded by granite to the north; the township of Springfield has slate and quartz to the westward.

The Sydney Road leads through a basalt country for 20 miles. Soon after the slate ranges begin. Kilmore, over the Dividing Range, is on basalt. At Ferguson's, Broadford, is a fine-grained quartzose sandstone, and a quartz conglomerate. Roofing slate lies between that and Seymour. Slate commences, also, two miles north of Kilmore. Basalt intrudes a few miles south of Seymour, and granite for six miles north, succeeded by slate. Avenal and Longwood are upon granite; the same rock extends from Violet Town to Benalla, on the Broken River. Dark limestone is quarried at the latter township. Twelve miles north of that river the slate and quartz are seen. Flats then extend to Spring Creek, of the Ovens district, where the granite re-commences. Between Kilmore and Mc Ivor is the granite country of Mollison's Creek and Pyalong, with its huge boulders. This rock is exchanged for quartz and slate at the "Pick and Shovel," ten miles south of Heathcote, on Mc Ivor. On Mr. Pohlman's station westward is some meerschau clay in a silicious rock. At Mc Ivor, in addition to gold deposits, very rich sulphuret of antimony is obtained. In the contorted slate rock of Mount Ida, Mc Ivor Creek, the following fossils are found: Trilobites, Orthocerites, Crinoids, Zoophyta, Mollusca, &c.

THE ORIGIN OF GOLD.

What is the origin of gold? Some speak of a volcanic scattering of a shower of yellow crystals, others the dissolving power of heat in the plastic quartz rock, and some of chemical agency. The geological writer, Mr. Ansted, tells of the auriferous veins being first mechanically deposited, then transmuted—their materials being derived from older gold rocks in gneiss. The Rev. W. B. Clarke, of Sydney, one of the first of Australian savans, refers the gold and silicious impregnations to the steam of silex, forming quartz veins, and that this action was beneath the surface of the ocean. He thinks that the gold and quartz were formed at the same time. Yet he finds evidence that some of the crystalline rocks must have been sedimentary in their character. He notices the passages of indefinite variety, from true granite to sienite, &c., and declares the hornblendic rocks the source of transmutations associated with the occurrence of gold. The question of the volcanic origin of gold-bearing slate rocks has been settled, since the discovery of fossils in them, by the Victorian geologist, Mr. Selwyn, and others. In similar Silurian rocks, in Bohemia, 1,200 different species of fossil remains have been found. The thickness of our Silurian formation is thought, by Mr. Selwyn, to be 35,000 feet. Gold is found in the granite of New South Wales, &c. There is a barren as well as fertile quartz. The burnt quartz of diggers is a chemical-cement of iron and gravel, without a fiery origin. The pipe clay differs from slate in having more alumina with its silica, and no iron and potash. Mr. Selwyn views the vast deposits of pipe clay of Bendigo White Hills to be *in situ*, not derived from the washings of other rocks.

The presence of gold, as of other mineral veins, is accounted for on chemical grounds only, by Mr. Evan Hopkins. He believes that metals are mineral trees, dependent for growth and transformations upon the strength and character of the acids and alkalis in solution, and

the intensity of electrical polar force. The Alluvial gold deposits of our valleys are often of immense depth. Sir T. L. Mitchell observes, "Vast lapses of time have contributed most of the accumulations of the fluvial gold." This was doubtless by fresh-water currents, and not marine, as in these deposits fresh-water mollusca have been seen, with the bones of our ancient marsupial animals. This would suppose a greater amount of rain than Australia now receives, which will, also, involve the idea of greater elevation of mountain ranges to attract the moist atmosphere of the tropical regions.

The gold does not appear of great depth in the rock, though it may exist in very minute particles, or in another unmatured form, awaiting the polarising action of terrestrial magnetism near the earth's surface, for, as Mr. Hopkins says, "Gold only becomes developed by crystallising or efflorescing towards the surface." The operation of terrestrial magnetism is evidenced in the curious meridional direction of the auriferous bands. Humboldt, when among the Andes of America, in 1792, first noticed the parallelism of these crystalline rocks, in the line of north-east and south-west. As the cleavage of slate has been artificially produced by the slowly continued action of a galvanic battery, we may yet live to see the production of metallic veins imitated by a similar agency, and the dreams of alchymist gold-makers realised. Experiments upon the red earth of the gold fields may not be without important results. As to the extent of the auriferous deposits, we believe that not only in the quartz and slate mountain districts will the search be made, but beneath the sandstone floor of the Murray and Darling, and the basaltic bed of our fertile plains. Would that the moral prospects of Australia were as brilliant as the anticipations of its material progress!

TASMANIA,
FORMERLY
VAN DIEMEN'S LAND. .

THIS Island is separated from Victoria by Bass's Strait. The country is 250 miles in extreme length and 200 the greatest width; containing 24,000 square miles, or 15,000,000 acres, of which 150,000 are in cultivation. The population is 100,000. The aborigines are reduced to a dozen.

Though mountainous and woody, there are many fertile valleys and plains. The western side is almost inaccessible from its scrub, hills, and marshes. The climate is one of the healthiest in the world.

Tasmania was discovered by Tasman, a Dutch Navigator, December 1, 1642, and named Van Diemen's Land from his friend the Governor of the Dutch East Indian possessions, then at Java. It was visited by Cook in 1777, and colonised by Governor Collins from the deserted shore of Port Phillip in February, 1804.

Flinders and Bass sailed round the island in 1798. The colony became independent of New South Wales in 1825. Colonel Collins died in 1810; Colonel Davey became Governor in 1813; Colonel Sorell in 1817; Colonel Arthur in 1824; Sir John Franklin in 1837; Sir J. E. Eardley Wilmot in 1843; Sir William T. Denison in 1847; and Sir Henry Fox Young in 1855.

The exports of the colony are wool, corn, timber,

man's Cap, Humboldt and Cradle; these are

the exports of the colony are wool, corn, timber,

potatoes, oil and fruits. The value of the exports for 1854, was £1,433,024. The revenue of the Government was £367,630, and the expenditure £245,982.

MOUNTAINS.

Tasmania is a hilly country. To the north-east is the Ben Lomond Range, to the eastward the Great Western Chain; the whole of the southward and westward country is much elevated. One chain extends from D'Entrecasteaux's Channel north-west across the island. The lofty table land about Oatlands divides the northern from the southern waters. A great table land also extends westwards of the Macquarie, and southward of the Meander, containing the six great lakes, and from which descend the waters of the Derwent, Mersey, Lake and Arthur Rivers. The table land of Ben Lomond, the source of the South Esk, is the third great watershed of the island. ❀

The western mountains rise suddenly out of the plains. The eastern point is Dry's Bluff, 20 miles from Launceston; the north-eastern is Quamby's Bluff, near Westbury; the south-eastern is Miller's Bluff, west of Campbelltown. Dry's Bluff is 4,600 feet above the sea level, and 4,000 feet above the plain. The table land averages 4,000 feet in height, and extends many miles to the southward and westward.

On this high plateau several peaks rise to 5,000 feet and upwards: as Hugell, the Sisters, Frenchman's Cap, Humboldt and Cradle; these are west

O

of Lake St. Clair. Hugell, Gell and Eugene form a triangle. The Sisters, Prince of Wales, Byron, King William, Deception and Sorell, are mountains between Lake St. Clair and Macquarie Harbour. Mounts Ida, Olympus and Shakespeare, are near the Lake. The plateau is lowered toward the south, being at Marlborough Township only 2,900 feet high. The Nive source is 4,200 feet.

High mountains divide the Derwent from the Huon. The range is a continuation of the elevated western land, and passes throughout Buckingham county, ending at Mount Wellington, near Hobart Town, 4,200 feet. Mount Nelson, below Hobart Town, is 2,000 feet high. The chain northward, beyond Macquarie Harbour, includes Flinders, Heemskirk, Zeehaan, Norfolk, and the Eldon Hills.

South of the Huon, are the Arthur, Frankland, Hartz, and Picton Ranges; and Adamson's Peak at the source of the Esperance. Mount Pollard is ten miles north of Port Davey. The quartz western Coast Range is from 3,000 to 4,000 feet high. The Peak of Teneriffe, near the Derwent, is 4,500 feet. Sorell, near the Frenchman's Cap, is 4,100 feet. Arrowsmith, near Macquarie Harbour, 4,000.

A range runs north-west from the Derwent above Hobart Town, commencing with Mount Dromedary beside the river, and divides the waters of the Ouse from those of the Jordan. Another range runs northward from Brighton to the Oatlands Table land. The township is 1,300 feet high. The Black Range is in the Oatlands district. Table Mountain and Direction, near

Lake Sorell, are 4,000 feet. Tierney's Range is near Lake River.

To the north-east are Ben Lomond, 5,000 feet high, between the North and South Esk; Ben Nevis, north of Ben Lomond, 4,200; St. Paul's Dome and Henry, south of Ben Lomond; Nicholas, fifteen miles from the sea, and St. Patrick's Head, by the shore, 2,300, are east of the Mount. The Hampshire Hills, 2,000 feet, are by Emu River; and the Surrey Hills, with Valentine Peak, are south of them. Tor, Gog, and Magog, by the Mersey, are in Devon County.

The western elevated plains are King William Plains, by Lake St. Clair, containing 40,000 acres; Arthur's, 80,000; and the Vale of Gordon, 120,000 acres. The Middlesex Plains, 2,700 feet high, are between the Surrey Hills and the Lake Plateau.

RIVERS.

Tasmania is better watered than the continent of Australia. Great mountain chains divide the eastern from the western waters; and a mass of high land, about Oatland's district, divides the northern from the southern. The two chief sources of Tasmanian Rivers are the Plateau, or high Table Land, of the Western Mountains; and the Plateau of Ben Lomond, in the north-east. From the first descends the Derwent with the southern drainage; and from the second, the South Esk with the northern drainage.

The lakes of the Western Table Land form the sources of the Derwent and its tributaries. The *largest stream* comes from Lake St. Clair south-

ward, and then south-westward by Hobart Town to the sea, at the junction of Storm Bay and D'Entrecasteaux's Channel. Its first tributaries are the Guelph and Navarre, from King William Plains; and the Nive, which, above Marlborough, receives the Pine from nineteen lagoons, with its branch the Little Pine. The Florentine comes next from the southward, and then the Dee from Lake Echo.

The Clyde, from Crescent Lake, passing Bothwell, unites with the Derwent below Hamilton; the Ouse, from lakes near the source of the Pine, flows, with its branch the Shannon, into the Clyde below Bothwell. From the southward then come the Russel's Falls, Styx, and the Plenty. About fourteen miles above Hobart Town the Jordan joins the Derwent, after flowing from Lake Tiberias in Monmouth, and through the Oatlands district. The Wellington Rivulet unites at Hobart Town; and south of that, are the North-west Bay and Brown Rivers.

The Huon River runs parallel with the Derwent, and is separated from it by the Buckingham Range. It rises from Lake Edgar. Its tributaries are from the southward; as Cracraft, from the Arthur's Range, the Picton, and the Arve. The Spring River reaches Port Davey. The Cygnet enters Southport. The Picton Range divides the Huon waters from the Port Davey waters.

The noble Gordon drains the country westward of the Lakes Table Land, and falls into Macquarie Harbour, after flowing southward, and then north-westward; its principal tributary comes from

Lake Pedder. The Frankland joins it near the Harbour. The Loddon is between the Derwent and the Gordon. The King falls into Macquarie Harbour, and the Pieman to the north of it.

The northern side of the island abounds with rivers. The Arthur, with its branch the Hellyer, flows from the Surrey Hills westward to the ocean above Mount Norfolk. Between Cape Grim and the Tamar of Launceston, are the following streams in succession, running into Bass's Strait:—the Black by Circular Head, the Inglis by Table Cape, the Cam, the Emu, the Severn, the Forth, the Don, the Mersey into Port Frederick, and the Rubicon into Port Sorell.

The Emu and the Blythe rise near St. Valentine's Peak; the Severn, from Mount Gipps, of the Surrey Hills; the Forth, from a range north of Lake St. Clair; the Mersey, from the Western Chain; and the Rubicon, from near Deloraine. The Tamar, produced by the junction of the Esks at Launceston, reaches Port Dalrymple and the Strait below George Town. Piper River enters the Strait east of the Tamar.

The South Esk, as long as the Derwent, is the great drainer of the Midland Country. Rising from the north side of Ben Lomond, it flows first eastward, then south-westward to Avoca; afterwards turns to the north-west, and enters the Tamar on the west side of Launceston. Its branches are,—the Break of Day from the east, the Nile and Cox's Creek from Ben Lomond, the St. Paul's, the Macquarie, and the Meander or Western. *The North Esk* from the eastward, with its branch

St. Patrick, meets the South Esk waters on the east side of Launceston; and they, together, form the wide Tamar, more an inlet than a river.

The St. Paul's runs westward from No Where Else to the South Esk, at Avoca. The Macquarie rises from Kearney's Bogs, twenty miles east of Campbell Town; runs southward to East Grinstead, and north-north-westward to the South Esk, near Longford. Its tributaries are,—the Blackman, near Ross, from the west; the Elizabeth, near Campbell Town, from the east; the Isis from Lake Sorell; and the Lake River, near Cressy, from a range north of Lake Sorell. The Meander, from north of Great Lake, runs to the northward, and then westerly by Deloraine to the South Esk, near Launceston; the Liffey, from Dry's Bluff, is its tributary.

A few small streams are on the east coast:—as the George, by St. Helen's; the Douglas, south of Patrick's Head; and the Prosser, opposite Maria Island. The Coal River, from Jerusalem, flows southward through Richmond to Pittwater into Storm Bay.

CAPES.

The Capes on the western side of the island, are Grim, the North-west Point, West Point, Sandy Cape, Point Hibbs, Rocky Point, and Port Davey Heads. To the south are South-west Cape, South Cape, and Whale Head; Tasman's Head and Bruni Head are south of Bruni Island. Fluted *Cape and Cape Frederick Henry* are by Adventure Bay, Bruni. Cape Raoul, or Basaltes, is to the

south-west; and Pillar, south-east of Tasman's Peninsula.

The capes to the east are Mistake and Peron, of Maria Island; Bougainville and Forrestier, by Prosser's Bay; Waterloo Point, by Swanport; Tourville and Degerande, by Freycinet's Peninsula; Lodi, Long Point, St. Patrick's Head, St. Helen's Point, Eddystone Point, Naturaliste, and Portland to the north-east. On the northern side are Circular Head, near Cape Grim; and Rocky and Table Capes between that and Emu Bay.

BAYS.

The Northern Bays are Ringarooma; Port Dalrymple, at the south of the Tamar; Port Sorell, west of Dalrymple; Port Frederick, receiving the Mersey; Port Fenton, at the Forth; and Emu Bay. On the west are Macquarie Harbour and Port Davey; Bathurst Harbour is the eastern part of Port Davey. To the south, D'Entrecasteaux's Channel is between Bruni Island and the Mainland; Port Cygnet and Oyster Cove are in the Channel; Adventure Bay is east of Bruni; Barnes, Trumpeter, Bad, and Taylor, are Bruni bays; and Storm Bay is between Bruni and Tasman's Peninsula. Southport and Recherche Bay are south of Bruni.

The bays in Tasman's Peninsula are Norfolk to the north, Wedge to the west, Monge or Pirate to the east, and Maingon, receiving Port Arthur, to the south. Pittwater, into Frederick Henry Bay, is north of Storm Bay; South Arm Peninsula is between Ralph's Bay and the Derwent.

On the east side are North, Marion, and Frederick Hendrick Bays in Forrestier's Peninsula, north of Tasman's Peninsula. Prossers and Spring Bays are opposite Maria Island; and Oyster Bay and Swanport near Schouten Island.

ISLANDS.

Tasmania is separated from Victoria by Bass's Strait, in which are many islands. King's Island, opposite Cape Otway, is forty miles long. To the south east of King are the Hunter's Isles of the three Hammocks, Barren and Albatross. Robbins lies between C. Grim and Circular Head.

South-east of Wilson's Promontory are Hogan, Crocodile, the Devil's Tower, Curtis, and Kent's Group. Nearer to Tasmania is Flinders, or Great Island, 120 miles round. Flinders, Barren, and Clarke, form the Furneaux group, divided from the main land by Banks' Strait. Sisters, Babel, and Goose Isles are near Flinders. Clarke and Swan are by Portland Cape.

Off the east coast are Schouten Island by Swanport, Maria south of Schouten, and Tasman south east of Tasman's Peninsula. Bruni Island, forty miles long, between Storm Bay and D'Entrecasteaux's Channel, is nearly divided in two. The Actæon Isles are in the Channel; Mewstone, Eddystone and De Witt, between the South and the South-west Capes; and Sarah is in Macquarie Harbour. Norfolk Island, in the South Pacific Ocean, twelve miles round, one thousand miles east of Sydney, is a dependency of Van Diemen's Land.

The principal peninsulas are Circular Head, to the north-west; Freycinet, near Oyster Bay, to the east; and Forrestier and Tasman to the south east. Geographe Strait divides Freycinet Peninsula from Schouten Island. Forrestier's Peninsula is joined to the main land by East Bay Neck, and is joined to Tasman's Peninsula by the Isthmus of Eagle Hawk Neck.

COUNTIES AND TOWNS.

Tasmania is divided into twelve counties. DORSET and DEVON are to the north, divided by the Tamar. CORNWALL is south of Dorset, meeting Devon at Launceston, and WESTMORELAND south of Devon and west of Cornwall. GLAMORGAN, on the east coast, is south of Cornwall, and SOMERSET, west of Glamorgan and south of Westmoreland.

CUMBERLAND is south of the lake country, and LINCOLN between that and Macquarie Harbour. MONMOUTH is south of Glamorgan on the east coast, and PEMBROKE south of Monmouth. BUCKINGHAM is between the Derwent and the Huon, and KENT between the Huon and the southern ocean.

The island is also divided into nineteen police districts; namely, Hobart Town, South Port, Sorell, Richmond, Brighton, New Norfolk, Hamilton, Bothwell, Oatlands, Campbell Town, Fingal, Great Swan Port, Morven, Horton, Longford, Westbury, Port Sorell, George Town, and Launceston.

The capital is Hobart Town, on Sullivan's Cove, near the mouth of the Derwent, in lat. 42.53° S., long. 147.24° E., containing 20,000 people. Launceston, at the junction of the North Esk, South Esk, and Tamar, is 125 miles north of Hobart Town, and contains 9,000.

The following towns are on the road between those two towns: Bridgewater 11 miles from Hobart Town, Brighton and Pontville 14, Bagdad 20, Green Ponds 28, Jericho 44, Oatlands 51, Ross on the Macquarie 73, Campbelltown on the Elizabeth 80, and Perth 112. George Town, at the mouth of the Tamar, is 40 miles north of Launceston. The old settlement of York was opposite George Town.

On the northern side, are Woolworth, by Cape Grim; Stanley, at Circular Head; Birnie, on Emu Bay; Burgley and Ulverstone, on the Leven; Tarleton, on the Mersey; Exeter, on the Tamar; Weymouth, at the mouth of the Piper; Portland and Ringarooma, near Cape Portland. Westbury is 20 miles west of Launceston, Deloraine 30 west, Carrick 12 west, Evandale 12 south-east, Cressy and Longford, in Norfolk Plains, 14 south.

To the southward, are Brown's River township; Lennon of North Bruni; Cookville, of Adventure Bay; Beauford of Bruni, near Tasman's Head; Victoria, at the junction of the Mount and Huon Rivers; Welsh, at Port Cygnet; Hythe, at Swanport; Camden, near the *mouth of the Esperance*; Ramsgate, at *Recherche*; and Bathurst, at Port Davey.

To the westward, are New Norfolk, 20 miles from Hobart Town; Hamilton, on the Clyde, near the Derwent, 40 miles; Dornoch, near Hamilton, on the Derwent; Victoria Valley, 12 miles west of the Ouse; Marlborough, on the Nive, between Lakes Echo and St. Clair; and Montgomery, between Point Hibbs and Rocky Point.

On the eastern side, are Richmond, 10 miles from Hobart Town, on the Coal River; Beaumont, on the Coal; Lovell, on Pittwater; Jerusalem, north of Richmond; Buckland, on Prosser's River; Tenby, on Prosser's Bay; Pontypool, of Little Swanport; Llandaff, in Great Swanport; Swansea, at Waterloo Point; Bicheno, by Cape Lodi; Burgess, above Douglas River; Falmouth Roadstead, east of Ben Lomond.

In the interior, are Bothwell, on the Clyde; Jerusalem, south of Oatlands; East Grinstead, north-east of Oatlands; Tunbridge, on the Blackman; Cleveland, in Epping Forest, north of Campbell Town; East Bourne, on the South Esk; Avoca, at the junction of the St. Paul's and South Esk; Fingal, between Avoca and Falmouth.

REMARKS.

Over the Derwent, at Bridgewater, a noble bridge has been made. Norfolk Plains and New Norfolk were the favourite farming places of the old Norfolk Island settlers. *Bicheno* is so called after the deceased Colonial Secretary of Van Diemen's Land. Epping Forest is 20 miles long.

Avoca means the *meeting of waters*, from the junction of the South Esk and the St. Paul's. Fine cataracts are found in the Gordon, and pines by the Pieman. Nothing is known of the north-west country. The Van Diemen's Land Company, established in 1825, have land at Woolworth, Circular Head, Emu River, and Middlesex Plains. Launceston is supplied with water at the cataract in the South Esk, before the junction with the Salt Tamar. Ben Lomond has a plain eight miles long on the top, containing a large lagoon. Mount Wellington is four miles from Hobart Town. Half-way up are the Springs, supplying the town. On the opposite side, at an elevation of 2,500 feet, in the North-west Bay River, are Falls, 230 feet deep. Beautiful fern-tree valleys surround the mountain. Sir John Franklin and his lady suffered much in their overland journey from the capital to Macquarie Harbour. The strong western breezes kept their vessel so long from getting out of the harbour that they ate wild greens from want of provisions. The western plains are covered with a coarse wiry grass. The road from Fingal district to the sea at Falmouth passes through a romantic gully, called St. Mary's Pass. Point Hibbs was the land first beheld by Tasman, December 1, 1642. Port Dalrymple was called after a celebrated geographer, who once petitioned the Government to grant to him the control and use, for a certain period, of all lands that should be discovered by him in the southern seas. The Hobart Town road to Prossers lies through a rough, dangerous place, called Paradise. Trumpeter Bay is so called from abounding in that fine fish. Sad shipwrecks have occurred on the rocks and shoals of D'Entrecasteaux's Channel. Tasman's Peninsula, since 1830, has been the principal convict station. The largest settlement is at Port Arthur. The boy's penal home is at Point Puer; opposite to which is the Isle of the Dead burying-place. Sentinels and huge dogs guard the entrance to the Peninsula at Eagle Hawk Neck. Through the narrow East Bay Neck, into *Forrestier's Peninsula*, the settlers sought to drive the *natives in the Black War*. Schouten Island, like Norfolk *and*, has no harbour. Bass's Strait is 250 miles long,

by 150 broad. King's Island, with its iron bound coast, has been the scene of many shipwrecks. Flinders is barren and waterless. Enormous numbers of sea birds are on the Strait Islands.

DISCOVERY AND HISTORY OF TASMANIA.

Tasmania became known to Europeans through its discovery by Abel Jansen Tasman. This Dutch Navigator left Batavia, in Java, the chief settlement of the Dutch East India Company, in August, 1642, in the yacht *Heemskirk* and the fly-boat *Zeehaarn*, or *Seahen*. Instructions were given by Van Diemen, the Governor, to sail to the southward, in order to find out how far the "Great South Land" extended in that direction. Tasman's journal is prefaced with these words; "May God Almighty be pleased to give his blessing to this voyage, amen." He sighted, on November 24th, on the west coast, a point afterwards called Hibbs, rounded then the south cape, passing some small islands, entered a stormy bay, doubled the peninsula, and on December 1, 1642, anchored in a bay which he named Frederick Henry, after the reigning Stadtholder of Holland, the father of our William III. The next day two armed boats landed on the beach of an inner harbour, now North Bay. On December 3rd, Tasman resolved to take formal possession of the country, but the surf was too great for the boat to gain the shore. The ship carpenter, Pieter Jacobsz, however, swam through the sea, and hoisted the flag of the Dutch Prince of Orange. Tasman named the country after his friend, Van Diemen, Maria Island after the old Governor's daughter, and Schouten after the Captain of the Horn discovery ship.

The next visitor was the French Captain, Marion, in the *Mascarin* and *Castries*, seeking for the southern continent. He entered Frederick Henry Bay, March 4, 1772. Meeting with a party of natives, the Frenchmen were asked by signs if they would light a fire. They did

so, when immediately spears were thrown among them, wounding several, from the supposition that the strangers were come to live upon their hunting grounds. The shots of the whites did more mischief than the spears. Captain Furneaux, of the *Adventure*, separated from his leader Captain Cook, entered and named Adventure Bay, Bruni Island, in March, 1773. He gave names to islands seen by Tasman; as, Mewstone and Friars. He afterwards discovered some islands in Bass's Strait. He told his commander that no strait existed between New Holland and Van Diemen's Land, but only a deep bay. Captain Cook landed in Adventure Bay, in his last voyage, in January, 1777. He put some pigs on shore. In 1788, Captain Bligh of the *Bounty* came to the same bay, and he repeated his visit in another vessel in 1792, planting fruit trees. Captain Cox, of the *Mercury*, in 1789, accidentally discovered Oyster Bay. The French Admiral Bruni D'Entrecasteaux, with Captain Huon Kermendée, discovered the Channel and Huon River, April 20, 1792. They entered a fine river to the north of the channel, and called it the North River. They gave a favorable account of the aborigines. Both the Admiral and his Captain died soon after in the South Seas. The ships were long detained by the Dutch at Java. The naturalist Labillardiere afterwards returned home. In 1794, Captain Hayes, from India, in the *Duke and Duchess* sailed up the North River, and, not aware of its discovery, he named it the Derwent. Mr. George Bass, Surgeon of the *Reliance*, left Sydney in a boat eight feet long with Lieutenant Flinders, and observed a swell in the ocean west of Western Port, which he thought arose from the sea being open. In a larger boat he discovered the strait, since called by his name, in January, 1798. The two sailing friends subsequently, in 1798, circumnavigated Van Diemen's Land in the *Norfolk* sloop, calling Port Dalrymple after the geographer, Circular Head from its resemblance to a Christmas cake, Hunter's Isles from the Governor, Point Hibbs from the sailing master of the *Norfolk*, Mounts *Heemskirk* and *Zeehaarn* after Tasman's ships, and *Norfolk Bay* after the sloop. Flinders named a group of islands

in Bass's Strait after Captain Kent of the *Supply*, and Waterhouse Island after the captain of Bass's ship, the *Reliance*; those two vessels formed the second fleet to Sydney. The favorable report of the situation of Sullivan's Cove, Derwent River, by Mr. Bass, was the occasion of the formation there of the settlement of Hobart Town by Governor Collins. At that time Mount Wellington was known as Table Mountain. Mr. Bass appears to have gone soon after to Valparaiso; where, quarrelling with the authorities, he was seized and sent to the quick-silver mines for life. There is no authentic record of his end. Baudin and Hamelin, in the French discovery ships *Geographe* and *Naturaliste*, called at Van Diemen's Land in 1801. They spent some time in the country, and made a splendid collection of Natural History. The eastern coast was carefully surveyed. Monge, the surgeon of the *Geographe*, was killed in the bay of the Peninsula, since called by his name. The storms of the Tasmanian stormy coast severely tried the French vessel. Assistance was sent from Port Jackson to work the ship into the harbour. Baudin soon after died. Hamelin went to the Mauritius, and spoke of their kind treatment by the English, only to be repaid by the imprisonment of his rival Flinders. This expedition lost upon the voyage twenty out of twenty-three of the scientific gentlemen brought from France.

In 1803 Governor King sent a party of prisoners and soldiers from Norfolk Island, under the care of Lieutenant Bowen, to form a settlement on the banks of the Derwent. The *Lady Nelson* landed the party at Risdon August 10. Orders were sent to Lieut. Simmonds, of the *Lady Nelson*, to proceed to Port Phillip, to bring thence to the Derwent Colonel Collins, who had attempted to form a penal settlement on a barren and waterless part of that country. The whole party were landed in Sullivan's Cove, February 15, 1804. The settlement was called Hobart Town after Lord Hobart, Secretary of State. On the banks of the creek was an almost impenetrable scrub. The *Lady Nelson* on her return to Sydney called at Port Dalrymple, and reported so well of the locality, that Governor King sent a

party there under Colonel Paterson. They made their home near the mouth of the Tamar, opposite George Town. But destitute of water, they removed in 1806 to the upper end of Port Dalrymple, subsequently called Launceston by Paterson, after the Cornish home of Governor King. The northern settlement was independent of the southern one till 1812. A private expedition of Mr. Birch, a settler, under Captain Kelly, was the means of discovering Macquarie Harbour in 1816. The reward for this enterprise was one year's monopoly of the pine trade.

The early history of Van Diemen's Land is one of crime and misery. The destruction of the crops of New South Wales, by the flood of the Hawkesbury, left the Derwent Station without succour. For six months nothing could be issued from the public store. The people lived upon kangaroo meat, purchased by the Government, at eighteen-pence per pound. The whole community was a drunken and dissolute one, free and bond. Convict men and women were at large, and desperadoes ruled the streets. The moral condition of the Colony was not improved by the private virtues of the early governors. In such dread did the citizens live, that shopkeepers kept loaded pistols near them, and slept at night upon their own counters. The country districts were ravaged by large troops of armed bushrangers. In vain were the terrors of law employed. Governor Davey placed the Colony under martial law, and severely flogged any, even if free, who ventured out of house after sunset. The stern discipline and good example of Colonel Arthur checked the evil, and made the island the abode of peace and safety. The commercial interests received attention. The exports for 1815 amounted to only £885. In 1819 they increased to £21,054, and in 1820 to £33,225. The want of coin led to the adoption of bill money. Promissory notes of tradesmen were given for twopence. The dollar was the common medium of exchange. It was once valued by the Government at five shillings, but at four in receipts. One fourth *part* punched out of the centre was a substitute for a shil-

ling, and was called a Dump; the other part was known as the Ring dollar.

Literature was apparent as early as 1810, in a flysheet of brief existence, called the *Derwent Star*. Bent's Hobart Gazette came out in 1816. The Colony remained a dependency of New South Wales till 1825, up to which time criminals were forwarded to Sydney for trial. The Prisoner Assignment system was first introduced by Governor King in 1804. A convict was bound to a free man for twelve months, and received ten pounds a year wages, if a male; seven, if a female. Macquarie Harbour became, in 1822, the chief penal station of Van Diemen's Land. The treatment was severe, and often brutal. Separated from the settled districts by the sea, or by an impassible country, there was no hope of escape from misery or death. The adoption of Port Arthur in 1832 led to the abandonment of Macquarie Harbour. In 1840 the Probation system was introduced, whereby the prisoners served a certain portion of their time in working gangs, apart from the ordinary population. On moral and pecuniary grounds it could scarcely be considered an improvement upon the Assignment system, with all its evils of neglect and tyranny. The appeals of the settlers, for the cessation of transportation to Tasmania, brought not the relief until Australia became a gold field, since which period no more prisoners have been sent to the island.

Governor Macquarie, in 1811, gave names to the streets of Hobart Town. One was after Lord Liverpool; another after his own wife Elizabeth; a third after his native county, Argyle; and a fourth, from Captain Murray, then in command, after the death of Collins in 1810. Lieut. Edward Lord and Captain Murray were acting governors between 1810 and 1813. Colonel Davey, the second Governor, came in 1813. Though rough, he was kind, but not fit for a governor. Colonel Sorell succeeded on the retirement of Davey, in 1817. He did much good for the island. He opened the road to Launceston, and introduced improved flocks of sheep. Mr. McArthur, of Sydney, received 4360 acres of

land for forwarding three hundred lambs to Hobart Town in 1820. Settlers then received grants of land, of not more than four square miles each, with rations for their families and convict servants, seed and stock. The Government further undertook to receive all the wheat they grew, at the fixed rate of ten shillings a bushel, and their meat at sixpence a pound. The export of wheat increased from 1700 bushels in 1815, to 47,000 in 1820. Before 1818, there had been granted 25,000 acres of ground; from that year to 1821 not less than 273,000 acres were granted. These grants were subject to a quit-rent to the Crown of five per cent. on the value of the land. In 1834 this was reduced to twopence an acre per annum, though five shillings an acre was then charged for the suburbs of Hobart Town. The Norfolk Island settlers were obliged by Government, in 1807, to remove to Van Diemen's Land, where they received grants of land. The population was 3,550 in 1818, and doubled itself by 1820. The Colonial Revenue in 1824 was £22,000.

Colonel Arthur became Lieutenant Governor in 1824. With all his faults, he laboured honestly and arduously for the moral and commercial welfare of the island. In December, 1825, Tasmania ceased to be considered a part of New South Wales. Before that time, offenders in the Island were tried by Sydney judges. In 1825 the English Van Diemen's Land Company bought 250,000 acres on the northern side, at a half-crown an acre. Bushranging was very prevalent in Governor Arthur's time. The most noted robbers were Michael Howe and Brady. In 1834 the Black War, against the poor Aborigines, was proclaimed. Colonel Arthur was succeeded, in 1837, by the benevolent Sir John Franklin, the friend of education and religion. The old Assignment system of convictism was changed for that of Probation in 1840. Sir J. E. Eardley Wilmot became Governor in 1843. Sir William Thomas Denison arrived in 1847, and greatly improved the public *works of the Colony*. Sir Henry Fox Young was proclaimed in 1855. The beautiful island of Tasmania is an agreeable home to immigrants. The history of Tasmania,

by the Rev. T. West, is as authentic in detail as it is elegant in composition.

Tasmania greatly progressed after the Gold Discovery. But the thoughtful will observe the same rapid changes in the speculative years as were noticed in other Colonies. The exports and imports for the different years were relatively as follows:—1840, £867,000 and £988,356; 1844, £408,799 and £442,988; 1848, £490,281 and £594,154; 1850, £613,850 and £653,540; 1852, £1,509,883 and £860,488; 1853, £1,757,596 and £2,273,399. The exports for 1854 were £1,433,021, of which half were from Hobart Town and half from Launceston. In 1853, the export for timber alone was £443,161, while in 1851 it was only £32,726. The export of wool was £320,096. The Government Revenue, for that year, was £257,872, and the expenditure £144,297; but for 1854, £367,630 and £245,982. The estimated revenue for this year is £295,760. There are now in the Colony about 17,000 horses, 100,000 cattle, and 2,100,000 sheep. 120,000 acres are in crop. Half the male population were in bondage in 1854. The land sold in 1841 amounted to 62,183 acres; and in 1853 to 35,800 acres. The ministers of the Church of England are 49; Roman Catholics, 17; Church of Scotland, 11; Independents, 9; Wesleyans, 7; Free Church, 3; Baptists, 2.

GEOLOGY OF TASMANIA.

THE amount of agricultural land is small and in confined patches, excepting on the plains about Campbelltown, Longford, &c. Its pastoral capabilities are deficient. On the Hobart Town side, the country is so hilly and so densely timbered that the plough can make little progress. The centre, or Oatlands district, is also very rough. The western side was until very lately wholly inaccessible. When the wiry grass is burnt off, a good cattle feed grows

in its place. But the country there is fearfully scrubby, swampy and rocky. The south-eastern portion, Richmond way, is more open and fertile. The mountains north-eastern are unexplored. The north-west part is unknown. The south-western is little known; but on the banks of the Huon exist an extraordinary richness and depth of soil, with a moist climate, making it a wonderful agricultural district. South, east, and west of Launceston—to Evandale and to Deloraine—another beautiful and fertile region gladdens the eye. On the northern side, from Circular Head to the Tamar, are many productive localities, especially at Emu Bay, Middlesex Plains, &c. On the banks of all the rivers and upon all the basaltic plains is a luxuriance of pasture. The late Surveyor-General Frankland has remarked one striking peculiarity. He says, "Referring to the best districts of the island, it may be stated that there is, perhaps, no country in the world so unequal or presenting such sudden alternations of soil." The Tasmanian soil, where good, is very good; and the industry of the colonists has deservedly raised the name of the produce from this romantic and healthy "Queen of Isles."

The Geology of Tasmania is highly interesting. The prevalence of trappean greenstone and basalt distinguishes it from other colonies; and these rocks appear not so much in the form of plains, as in Victoria, but in huge mountain masses and vast boulders. The slate extends to the northward and westward, the quartz to the south-west, the granite to the eastward, and the greenstone or basalt to the south, south-east and centre.

Hobart Town is partly resting on basalt. There are, also, resting on the clay-slate floor, some excellent variegated and white building sandstones, with patches of useful limestone of recent origin. Greenstone boulders are common. Bituminous shales extend a few miles north of Hobart Town, having impressions of fern leaves, &c. A considerable quantity of anthracite coal is raised from New Town, adjoining Hobart Town. There is a limestone full of recent fossils in the neighbourhood. Mount Wellington, the terminus of a long and elevated range, overlooks the

city. Basalt appears on one side and on the top, and greenstone on the other. A portion of limestone has been raised with it on the southern side, which is called "Lady Franklin's Platform." The "Ploughed Field" is an enormous collection of boulders, half-way down the mountain from the top. Boulders of scoriaceous basalt extend nearly the whole length of the valley of the Derwent. Mount Dromedary, on the opposite side of the Derwent from Wellington, contains fossil recent limestone, similar to that above-mentioned, containing *Spirifers*, *Terebratulæ*, *Pectens*, &c. Epsom salts may be seen at the Dromedary. About ten miles south-east of Hobart Town is the tertiary sandstone of Grass Tree Hill, 1,000 feet thick, containing the *Pectens*, *Spirifers*, &c. Beyond this is the yellow sandstone between Richmond and the sea, with its caves covered with salt. The learned geologist, Dr. Milligan, places this at from 500 to 1,000 feet in thickness. In this sandstone, much disturbed by basaltic dykes, is good anthracite coal. There are greenstone hills to the east of the field. Some greenstone dykes have veins of crystallised carbonate of lime. The Jerusalem coal is in a grey sandstone, with an upper stratum of brown sandstone, containing intrusive greenstone. This excellent bituminous mineral contains 72 parts of carbon, 14 of hydrogen, 4 of oxygen, and 9 of nitrogen.

To the southward, on the shores of the Channel and Storm Bay, the greenstone is all-prevailing. Greenstone and basalt divide the waters of the Derwent and Huon. At Brown's River, the fossils of the clay rock indicate the age of the Wellington limestone. Slaty porphyry is seen beside this clay rock at Oyster Cove, and pipeclay at the mouth of the Huon. Porphyry and fossil wood are collected from the head streams of that river. Greenstone forms the south of Bruni Island; coal is obtained in Adventure Bay. On some of the Channel Islands nodules of iron pyrites are observed in the blue slate. Mount Picton has quartz on the west, basalt on the east, and granite at the top; spiriferous clay rock leans against it. Whale Head and the south coast are of greenstone; wood is found there with one part silicified and the other ferr

ginous. Anthracite is contained in the greenstone inland country of Southport; its sulphurous element forbids its use in the house. At Recherche Bay, the coal in greenstone runs under the sea; it contains 75 parts of carbon, 14 of hydrogen, 5 of oxygen, and 6 of nitrogen. Ireland, like Tasmania, has a north and south distribution of coal; its southern, in Leinster and Munster, is anthracite; its northern, in Connaught and Ulster, is bituminous. A continuous deposit is anthracite in Pembrokeshire, of South Wales, and bituminous in Monmouthshire.

To the south-west, the rocks are crystalline. The quartz hills of the western coast shine brightly to the passing voyager. At Port Davey, the mica slate appears with the quartz. Between Port Davey and the Lake Country of the interior, quartz is predominant. Blue shell limestone and other tertiaries occur by Florentine River; the fossils are similar to the Wellington limestone. The clay slate appears in ridges southward. The Lake Country of the interior is a vast elevated plateau, of from 3,000 to 5,000 feet above the sea level. The lakes themselves, St. Clair, Great, Arthur, &c., are conjectured by Count Strzlecki to be ancient craters, from which issued the wondrous streams of greenstone and basalt of different epochs. This lofty district is chiefly granite and basalt upon clay slate. The peaks are of quartz, granite or slate. The Frenchman's Cap is of slate and granite, with a summit of quartz; Mount Cradle, is of quartz; Gell, of talcose slate; Hugel, of basalt on slate; the Sisters, of quartz and slate; Quamby's Bluff, of greenstone. The eastern wall of this plateau is greenstone; at the foot of it, tertiary limestone and sandstone are presented. A sandstone range by Macquarie Harbour is rich in iron. On Franklin River is galena in mountain limestone, and much branching coral. The Gordon rushes through a quartz gorge 600 feet deep, and afterwards over recent fossil limestone in the lower country; at its great bend, ferruginous conglomerate is associated with slate. The fossiliferous limestone abuts against highly inclined slate. On the south side of the plateau, on the Upper Nive, is a limestone containing the *Producta*, *Spirifer*, *Pecten*, *Stenopora*, &c. Coal is seen on

the Nive, five miles from Marlborough. The Upper Derwent runs over greenstone. Rich red hematite of iron is found near Bothwell. On the basaltic Macquarie Plains are some singular silicified pine trees, in an upright position. These are imbedded in the vesicular lava. The circumference of one was converted into a fine agate. About 12 feet of the upright branchless stump was seen by the compiler a few years ago. A stream, within a few yards, flows over compact greenstone. The settlers near talked of finding a fossil crocodile's head; this was the silicified stump of a pine. Great quantities of this fossil wood lie scattered along the valley of the Derwent. In the interior, the slate rocks prevail, especially in the rough and lofty Oatlands district.

The south-eastern portion is strong in basalt. Tasman's Peninsula is thoroughly basaltic. Port Arthur anthracitic coal contains 80 parts of carbon, 9 of hydrogen, 2 of oxygen, and 9 of nitrogen. The fossiliferous slaty formation near Eagle Hawk Neck, containing spirifers, resembles Roman tessellated pavement. There is a white clay slate studded with grains of iron pyrites. On the coast of the peninsula is the celebrated Tasman's Arch, through which vessels may sail. The key stone is 40 feet thick; the height is 200 feet. There is a chasm about 200 yards inland through which the sea may be seen rushing with great force. The noise of the air of the blowhole may be heard five miles. Clays occur at Port Puer of Port Arthur. North of the peninsula, in the Eastern Marshes, the flinty slates reappear from beneath fossiliferous limestone. Prosser's Plains are of greenstone. Schouten Island has granite on the eastern side and greenstone on the west. Beneath the greenstone is the carboniferous formation in sandstone and in fire clay, bearing vegetable fossils; the clay slate is beneath all. Dr. Milligan calculates that there are about three million tons of this excellent bituminous coal. This deposit is supposed to run under Oyster Bay, as it appears on the other side in Little Swan Port, &c., under greenstone boulders and gravel. The coal crops out well on the banks of the Douglas River on the east coast. This is in grey limestone on slate. There are

fossil trees in an erect position with roots. Some of the wood is partly silicified. The heights above the river are of greenstone. The seams are eight and some twelve feet thick. The river has a bar at its mouth. North of Wabb's Harbour is the carboniferous sandstone. Round Long's Point, on the beach, is a large quantity of rounded water worn jet coal. Granite lines the coast between Falmouth and Patrick's Head. Slate and granite are found on the Scamander, and the greenstone hills by the Apsley. Long Point is of quartz, slate, and granite, and Patrick's Head of sienite and granite. In Mary's Pass leading to the sea at Falmouth are perpendicular crystalline bands, with hornblendic granite changing into micaceous granite.

Northward the slate is mostly before us. Cape Grim has a crystalline whetstone, like Turkey-stone; its elevated beaches are 100 feet from the sea. Circular Head has a bold basaltic shore; a beautiful marble ornaments the neighbourhood. The Surrey Hills are of basalt. Slate form the coast between Circular Head and the Mersey. On the Mersey are fossil shells in a conglomerate of the age of Tamar clay and Wellington sandstone. Between the Mersey and the Don is some good bituminous coal, though Mr. Selwyn believes it is not of great extent. That gentleman found the miners at the Mersey had at a great expense been sinking a shaft 270 feet, through rock always beneath coal but not above it. The yellow coal, or dysodile, of the Mersey, is a combustible mineral, of brown colour, burning with much smoke, peculiar colour, and white flame. The Don coal seam, two feet thick, is bituminous; the field is full of faults. Lignite abounds in Port Sorell and the banks of the Tamar. At the Forth are porphyry and slate, at Port Sorell mica slate and quartz, and at the Surrey Hills quartzose conglomerate and basalt. Asbestos Hills 1,500 feet high are near the Rubicon; Serpentine is on the east side. Good iron ore is known at the north of the Leven. The Islands of Bass's Strait are of granite. They are evidently peaks of land now sunk, and once connecting the granite rocks of Cape Howe county with the granite of Cape Portland county, north-east of Launceston.

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auriferous slate and quartz rocks stand out boldly in their meridional direction. Some gold has been obtained, and a Bendigo may yet be revealed in Tasmania. Greenstone and slate are near the township of Fingal. The carboniferous flagstones there contain *Spirifers*, *Serpulae*, &c. These merge into limestone similar to the Wellington limestone. The bituminous coal occurs in horizontal beds of sandstone and crinoidal limestone; the latter has strap shaped leaves, ferns, &c. The coal is sometimes in seams of twelve feet in thickness. The Killymoon mineral is very combustible. The coal crops out in the sides of the various creeks in the solid greenstone. Regular basins as in the regular coal fields are not seen. For this reason it is considered that the mineral, excellent as it is, is not of great extent; the seams soon run out against the solid rock. Mr. Selwyn views the Tasmanian and Victorian coal measures as of the Oolitic period, not so old and important as the regular carboniferous. Professor McCoy of Melbourne calls the fossil plants of the Tasmanian pits only Oolitic. There is a remarkable want of the Secondary formations in the island, as on the adjoining continent. With limestone, iron, and coal, it has the materials for manufacturing progress. With considerable natural resources, with a fine climate, with good soil, and with romantic and beautiful scenery, Tasmania has many attractions for immigrants.

NEW ZEALAND.

THIS colony is situated above 1,000 miles to the eastward of New South Wales, and contains an area of 100,000 square miles. It consists of three islands: the Northern, or Eaheinomauwe, 500 miles long, containing 42,000 square miles; the Middle, or Tavai Poenamoo, that is "The Island having the Greenstone," 500 miles long,

containing 55,000 square miles ; and the Southern, or Stewart Island, 50 miles long. The Northern island is now New Ulster, the Middle is New Munster, and the Southern is New Leinster.

The British population is about 50,000; the Maories or natives in the Northern Island are 100,000 in number; and in the Middle Island only 5,000.

MOUNTAINS.

New Zealand is decidedly a hilly country. In both islands, the ranges run nearly north and south; and their spurs east and west. The Southern Alps of Middle Island are always covered with snow. The eastern coast range of North Island is high. The Rua Hine, from Lake Taupo, is continued southward to Cook's Strait, Port Nicholson, in two branches, the Tararua and the Remutaka ranges. The Puketoi and Maungaraki are coast chains between Cook's Strait and Hawke Bay. The Coromandel range is eastward of the river Thames.

The loftiest peaks of North Island are—Edgecombe, by the Bay of Plenty, 10,000 feet; Egmont, near Port Plymouth, 8,300; Tongariro Volcano, south of Lake Taupo, 6,500; Ruapelu, south of Tongariro, 9,000.

In the Southern Island are loftier hills. Mount Cook, in the Alps, over the Canterbury Dividing Range, is 13,200 feet high; another mountain near it is 12,000; Kaikaro, south of Cloudy Bay, is 9,300; Peel and Tyrrell, south of Canterbury.

are 6000; and between Nelson and Canterbury are elevated plains of 5,000 feet.

Mount Arthur is west, and Ben Nevis south of Nelson. Brunner Peak is in the Alps; Herbert, in Banks' Peninsula; Grey, in Canterbury; and Anglem, in Stewart Island. The Wakefield Range is the northern boundary of Canterbury. The Malvern Hills are in Canterbury district, and Rickards and Hutt to the west of it. The Cheviot Hills form a spur of the Alps, and the Atua range is west of Otago.

RIVERS.

The country abounds in rivers, but those on the western side of the Northern Island have sand bars at their entrance. The chief rivers are—the Waikato, 250 miles long; the Waipa, 200 miles; Wairoa, or Long Water, 200 miles; Hokianga, Thames (or Waiho), Kiri Kiri, Hutt, Wanganui, Waiwakaia (or Canoe River), and Wairarapa.

The Waikato flows from Lake Taupo into Waikato Harbour; the Waipa is its tributary. The Wairoa falls into Kaipara Harbour, the Hokianga into Hokianga Harbour, the Thames into the Frith of Thames, the Hutt into Port Nicholson, the Wanganui and Manawatu into Cook's Strait, the Wairarapa into Palliser Bay, the Waiwakaia and Waitera run near Port Elliot, Taranaki; and the Cholmondely from Lake Coleridge.

The streams of the Middle Island are—the

Maitai, near Nelson; the Wairau, from the Alps, into Cloudy Bay; the Courtenay, Avon, Selwyn, Ashby and Chelmondely, in Canterbury; the Waitangi, on Ninety-mile Beach; and the Matou, or Molyneux, in Otago district. On the west coast are many rivers,—as the Buller, from Lake Arthur; the Grey, the Brunner, the Okitika, Awarua, &c.

LAKES.

Many of the lakes were originally the craters of volcanoes. In the Northern Island are Taupo, in the centre, 36 miles long by 20 broad; Rotorua, seven miles across, and a mountain in the middle; Rotoiti, or "Small Lake," joining Rotorua; Waikari, east of Taupo, 30 miles in circumference; Wairarapa, near Port Nicholson; and Rotomahana, or "Warm Lake." Many sulphurous and hot springs are near Rotorua.

In the Middle Island are Ellesmere, or Waihora, by Banks' Peninsula, 20 miles long; Arthur and Howick, south of Nelson; Coleridge, west of Canterbury, seven miles across; Brunner, north of Coleridge; Maniatoto, north-west of Otago; and Wanaka, Hawea and Greenstone Lakes, among the southern hills of the Alps.

The waterfall of the Kiri Kiri is 95 feet deep and 60 wide; that of the Waianiwaniwa, or "Waters of the Rainbow," is 70 deep and 50 wide.

BAYS.

The chief bays and harbours in the northern

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island are,—Wangaroa Harbour, Bay of Islands, Frith of Thames or Hauraki Gulf, Coromandel Harbour, Bay of Plenty, Poverty Bay, and Hawke's Bay on the east; Hokianga, Kaipara, Manukao, and Waikato Harbours, and Port Elliott, on the west. Port Manukao Harbour, 3 miles west of Auckland, is an excellent and important port. Nicholson and Palliser Bay on the south.

Those of the middle island are Blind or Tasman Bay, Massacre Bay, Coal or Admiralty Bay, Queen Charlotte Sound, Cloudy Bay, and Port Underwood, on the north; Open Bay, Milford Haven, Doubtful Harbour, Dusky Bay, Port Preservation, and Chalky Bay, on the west; Pegasus Bay, Akaroa Harbour, Port Cooper or Victoria, Port Albert or Levi, and Port Otago, on the east. Ports Pegasus and Adventure are in Stewart Island.

CAVES.

The chief capes in the northern island are North Cape, and Maria Van Dieman or Reinga, on the north; Brett, Colville of Coromandel Peninsula, East Cape, Kidnapper Head, and Turnagain on the east coast; Egmont of Taranaki; and Nina, of Hokianga, on the west; Palliser and Sinclair Head on the south. Those of the middle island are Farewell, Jackson, and Campbell, on the north; Rocky, Foulwind, Bald, Arnott, Cascade, West Cape, and Puysegar, on the west; Godley Head of Canterbury, Saunders near Otago, and Nugget by *Molyneux*, on the east. South Cape is in the southern island.

Cook's Strait is between the northern and middle islands; it is 100 miles wide at the northern extremity, and 50 miles at the southern. Foveaux Strait, between the middle and southern islands, is 40 miles long, and 10 miles broad.

ISLANDS.

The islands off the coast are few. The Three Kings are to the north-west of North Cape. Barrier is at the entrance of the Frith of Thames. The Volcanic White Island and Meyer's are in the Bay of Plenty. Kapiti or Entry, and D'Urville, are in Cook's Strait.

The Chatham Isles are 300 miles east of middle island. The Lord Auckland Isles are to the south of Stewart Isle, in lat. 51° S. A British colony is established at the Auckland Isles, and Mr. Enderby, the founder of this settlement of whalers, has been appointed Lieutenant-Governor. The Judge, Macquarie Isles, and the Bishop and his Clerk, are south of the Auckland.

DIVISIONS.

The colony, under one Governor, is divided into six provinces, each having a superintendent. They are—Auckland, the northern, New Plymouth, the western, and Wellington, the southern portion of Ulster. The other three are in the Middle Island: Nelson, the northern, Canterbury, the eastern, and Otago, the south-eastern.

TOWNS.

The capital is Auckland, in New Ulster, in lat. $36\frac{3}{4}^{\circ}$ S. long. $174\frac{1}{4}^{\circ}$ E., standing upon the southern shore of the harbour of Waitemata, in the frith of Thames. The town contains 10,000 inhabitants. Wellington, in lat. $41\frac{1}{4}^{\circ}$ S., is situated on Port Nicholson, in Cook's Strait, with a population of 7,000. Wellington is between 500 and 600 miles from Auckland.

The principal settlements in the Northern Island, besides Auckland and Wellington, are—Russell and Kororarika, in the Bay of Islands; the Waimate, or Deadwater, near the bay; Hokianga, timber port, to the north-west; Taranaki, or New Plymouth, on the west coast, near Mount Egmont; and Petre, Wanganui, or Large Bay, Wairarapa, and Manawatua, in Cook's Strait. Besides these, there are several small locations, near Auckland, of soldier pensioners from England.

The settlements of the Middle Island are—Nelson, on Blind Bay, 5,000 inhabitants, in the same latitude as Wellington; Cloudy Bay and Port Underwood, in the Strait; Akaroa, once a French location, on Banks' Peninsula; Canterbury, the Church of England settlement, near Banks' Peninsula; and Otago, or New Edinburgh, the Free Church of Scotland settlement.

The New Zealand Company of London established settlements, in 1839, at Wellington, Nelson, &c. The Plymouth Company settled New Plymouth, in Taranki district, in 1840, but sold their

right to the New Zealand Company. A Church of England Association, in 1850, colonised the Canterbury Settlement on, and near, Banks' Peninsula, Middle Island. A Free Church of Scotland Association organised New Edinburgh district, 200 miles south of Canterbury, in 1848.

The Valley of the Hutt is 50 miles from Port Nicholson; the Valley of Wairarapa lies north-east of the port; the rich district of Ahuriri north of the Wairarapa, and the Wairau Valley is on the north side of Middle Island. The isthmus near Auckland, where the Northern island is nearly divided in two, is only three miles across.

New Canterbury, between the Snowy Range and the eastern sea, is 50 miles long, containing two millions of acres. The port is Lyttleton, in Port Victoria, or Cooper, in Banks' Peninsula, lat. $43\frac{1}{2}^{\circ}$ S. Christchurch, on the Avon, is nine miles from the port. There are three great plains, Sumner, Whately, and Wilberforce. The population of Canterbury is 3,000.

New Edinburgh, or Otago settlement, contains 400,000 acres, and is 60 miles long by 7 broad. Dunedin, the capital, is in lat. 46° . Chalmers is the seaport. The New Zealand, Canterbury and Otago companies, from failure, have surrendered their lands to the Crown. Wellington is 200 miles north of Port Victoria, 150 east of Nelson, and 500 south of Auckland. Otago is 1,100 south of Bay of Islands.

New Zealand has an export of native flax, timber, flour, potatoes, Kauri gum, wool, oil, manganese, copper, and sulphur.

Tasman, the Dutch navigator, after discovering Tasmania, fell in with New Zealand, and named it, December 13th, 1642. Captain Cook first sailed round both islands, and then took possession of them in the name of King George III., on November 16th, 1769; his second visit was in 1773. Christian missionaries first visited the northern island in 1814. Whalers, runaway prisoners, and some respectable people afterwards came.

In 1837 Mr. Busby was nominated British Consul at the Bay of Islands. Formal possession of the Middle island was taken in 1840. In 1839 the New Zealand Company was formed in London, and the Canterbury and the Otago Associations were organised in 1849. They have now no land. The whole country belongs to the sovereignty of the Queen, though the personal property of the natives, according to the treaty of Waitangi, in 1840.

The Colony was proclaimed by Lieut.-Governor Hobson, May, 21, 1840. In May, 1841, it ceased to be a dependency of New South Wales. Governor Captain Fitzroy came in 1843; Sir George Grey, in 1845; and Colonel Gore Brown, in 1855. Heki's rebellion was in 1845. In 1852 New Zealand was declared to be under a Governor-General and six elected Superintendents. The Maories have equal rights with the English settlers.

NATURAL HISTORY.

The natural history of New Zealand is different from that of the rest of Australasia. It is a land of Ferns, of

which plant above 150 species are known to exist, beside three of the Tree-ferns, which are found 40 feet in height. There are more than 80 species of Mosses. The Kumera. Paro, and a sort of fern are the chief edible roots. The Korari, or Native Slow, grows in abundance, though not far south in the Middle islands. There is a species of Palm about 50 feet high. Myrtles are common. The juice of the berries of the Tupakihi is made into a mild, agreeable drink by the natives, but the seeds are of a highly intoxicating, maddening, nature. The Phormium Tenax, or native flax, makes excellent rope. The honey is delicious. The Kia-kia fruit is in layers, and is like vegetable albumen. There are several good native fruits. The Wattle Jack is a climbing plant. The Kauri is the only cone-bearing pine in New Zealand, the others having berries. The Totara takes the place of the Kauri, in certain localities; as a timber tree, it belongs to the same family as the Tasmanian Huon Pine. The Rata, or Native Oak, has been found nearly 60 feet in circumference. This wonderful tree first runs up and embraces the trunk of some large tree, which it afterwards supplants, and becomes in its stead a considerable tree; the Vegetating Caterpillar, a fungus growing out of the body of the caterpillar of a goat moth, is commonly found at its root. The New Zealand Fuchsia is a tree bearing a pleasant fruit. The Orchis family of plants is very abundant. The bush of the country is very dense. The Potato and Water Melon were introduced by Capt. Cook, and the Maize by Capt. King. One-half the plants are monocotyledonous, or of single lobed seed, and more than one-third are flowerless. Before the arrival of Europeans, the only quadrupeds were Cats, Dogs, and Rats. The Dog differs from the Dingo of New Holland, and appears to have been brought with the natives in their emigration; the Rat is similar to the European one. There are many Lizards, but no Snakes. The only venomous thing is a rare insect called the Wood Locust. The Kiwi is an Apteryx, or wingless bird. It is nocturnal, and runs quickly; it has sharp claws, black and tasteless flesh, a hook at the end of the stump of its wing, and a nostril at the end of the beak to search for worms.

Its bones are not hollow, and its height is two feet. The Fireman, a sort of Kiwi, stands three feet in height. The Uia, of the size of a Magpie, has a beautiful tail of twelve feathers. A nocturnal Parrot feeds on fern root. The Poe is a honey eater. The Crow is dark green. The Kukupa is a wood pigeon. The Oyster Catcher is a sort of duck. The Crested Cormorant, or King Shag, is peculiar. The Dinornis, or Moa, is a fossil sort of ostrich. A small species has been found in the Middle island, being two feet high, and having red legs, green and gold back, and purple breast. The Nestor was half a parrot and half an owl. With sixty genera of birds, New Zealand has but one species of Mammalia,—a fruit eating rat.

NATIVES.

The natives, who call themselves Maories, were formerly much more numerous than now; in the time of Captain Cook, the population is thought to have been at least half a million; but exterminating wars, and raging epidemic diseases, have reduced them to one-fourth of that number. Up to a recent period their intercourse with white men proved as destructive to their morals as their health. Now, however, being, by the praiseworthy agency of the missionaries, in most instances converted to Christianity, being placed under the care of protectors appointed by the Government, and being brought in contact with a better class of settlers, they are more comfortable and happy. There is a strong desire manifested to treat this intelligent and high spirited people with justice and kindness. As aborigines they are, perhaps, superior to any in the world. Their paha, or villages, are regularly fortified. The readiness with which they fall into the habits of civilised life is very striking; they make excellent seamen and mechanics, and in the settlements they dispose of the produce they raise. Many of them are possessed of property in farms and trading vessels, and have considerable sums in the Savings banks. There are six dialects of the language, *which is very complete in its construction.*

Though heathens, the New Zealanders were never

worshippers of idols. Their Atua, or gods, were the heaven, light, spirits of the dead, &c.; these were the authors of diseases. They believed in witchcraft, and thought light and darkness the parents of man. They thought that the spirits of the dead passed to the Reinga, near North Cape, and thence into the sea to the region of the blest. The Tapu, or sacred prohibition of the use or injury of certain objects, exists among them, as among other Malayan races of the South Seas; one curious effect of this custom occurs in the arbitrary tapuing of certain words. The natives appear always to have held slaves, who were chiefly captives taken in war. Like the ancient Jews they used to shave their heads and cut their bodies, in mourning for deceased friends. When first visited by Captain Cook, they were found living in well-constructed houses, amply provided with food and mat clothing, possessed of splendid canoes, but sadly addicted to habits of cannibalism. They had then a knowledge of eight points of the compass, they reckoned thirteen months to the year, and were acquainted with numbers to a considerable extent. Great resemblance has been detected between their manners and language, and those of the Sandwich Islanders. By their traditions it would appear, that about five hundred years ago, three canoes of a great fleet from Hawaii, got driven to New Zealand, which had previously been fished up from the bottom of the ocean by one of their gods. Some persons have considered that there are two races among them; one the regular Maori, and the other an inferior and dark skin people, supposed to be the aborigines of the islands. When heathens they were always at war, and whole tribes have been exterminated. The Waikato Maories, under Te Whero, invaded Taranaki, and cooked two thousand people. The remnant of the sufferers fled to Port Nicholson. The feeble tribe at that place forced an English captain, then in port, to carry them to the Chatham Isles, where they enslaved the less warlike inhabitants. Since their conversion to Christianity, no people have made greater progress than the New Zealanders.

DISCOVERY AND HISTORY OF NEW ZEALAND.

TASMAN sailed to the eastward after the discovery of Van Diemen's Land, and on December 13th, 1642, sighted the shore of the land since called after his Dutch home,—New Zealand. He named three islands off North Cape the Three Kings, January 4th, 1643, and the north-western point after Maria Van Diemen, the admired daughter of the Dutch Governor of Java. He surveyed the eastern coast of this Land of the States from lat. 34° to 43° . Landing on the northern shore of Middle Island, the savages killed several of his crew. For this, he called the locality the Bay of Murderers; it is now Massacre Bay, near Nelson. The Dutchman then left the wild country. For more than a hundred years no white man visited the islands. Captain Cook entered Poverty Bay, Oct. 16th, 1769. He sailed round the islands, and discovered the strait between them, since called after himself. The Bay of Islands he so named from the number of islands in it; Cape Kidnapper, from the natives there trying to steal a boy from the ship; and a peninsula, from his scientific fellow-voyager, Mr. Banks. Cook took possession of the Northern Island, at Mercury Bay, November 16, 1769; and of the Middle Island, at Queen Charlotte's Sound, January 30, 1770. His conduct toward the Maories was praiseworthy, and his gifts of the potato, melon, and pig are gratefully remembered by them. The Englishmen were astonished at the war canoes and mechanical contrivances of the natives. A rat was the only quadruped seen there.

Benjamin Franklin proposed, in 1771, an excellent scheme for the colonisation of New Zealand.

In 1772, the Frenchman, Marion, after his quarrel with the Tasmanian natives, came to New Zealand. A quarrel took place there, and sixteen of the strangers, with their commander, were killed and eaten. Shortly before this, a French captain had cruelly treated some New Zealanders. The year following, ten Englishmen of Captain

Furneaux's crew were killed and eaten also. So late as 1809, the *Boyd* was wrecked on the coast, and seventy of the people were baked in the native ovens. Vancouver, after his discoveries in Western Australia, touched at Cook's Strait, in 1791. Captain Stewart discovered the Southern Island, called now after him, in 1809. The country between the Alps and the western coast of Middle Island was explored a few years ago by Mr. Brunner. Starting from Nelson, with two natives and their wives, he passed eighteen months in one of the most desolate countries in the world. They chiefly subsisted upon eels and birds. It rained almost continually. Water rose in one night twenty feet, in a river. No good land was seen. The London Geographical Society rewarded Brunner's sufferings with a gold medal. His furthest point was lat. $43\frac{1}{2}^{\circ}$ S., near Mount Cook.

After the settlement of New South Wales and Van Diemen's Land, runaway sailors and convicts took refuge among the cannibals of New Zealand. Christian missionaries arrived in 1814. Catholics and Protestants have vied with each other in their zeal for the good of the natives.

Settlers of a more respectable character followed. Whalers frequented the harbours. In 1825, an English company purchased two islands in the Thames, but were frightened away by the natives. From the year 1788 the savage land of New Zealand was always claimed as a dependency of New South Wales. In 1814, the English Government discovered that the islands belonged to the natives. In 1834, King William IV. sent out the ship *Alligator*, with a fine flag, to present as a national banner to some few chiefs who styled themselves the "United Chiefs of New Zealand." In 1837, Mr. Busby was declared British Consul at the Bay of Islands. Possession was taken of Middle Island, in August, 1840, by virtue of its discovery by Captain Cook. Three days after, the French frigate *L'Aube*, with emigrants, came to Banks' Peninsula, to claim the land for France. But in the Northern Island were 150,000 warlike Maories, who

will had to be consulted. In 1839, the English New Zealand Company was formed, to buy land of the natives and re-sell to emigrants. Millions of acres were purchased for them, by Colonel Wakefield, for some hundreds of pounds' worth of beads, umbrellas, muskets, &c. The Government now saw it was time to act. Captain Hobson was despatched as Consul, with a secret commission as Lieutenant-Governor. On February 5, 1840, a meeting of 550 chiefs was secured. It was agreed by them that the Queen should be the sovereign of New Zealand, and that they would sell no lands except to her. Captain Hobson, on the part of the Queen, engaged that the natives should have safe and full possession of all their lands. This was the treaty of Waitangi. A week after, at Hokianga, a similar meeting of 500 chiefs and 6,000 natives took place. On May 21, 1840, Captain Hobson proclaimed the country an English dependency, and himself Lieutenant-Governor under the Governor of New South Wales. The latter colony advanced £30,000 toward the expenses of the new settlement. Among the curious items of expenditure, were £15 for a magic lantern, £70 presents for Chiefs, and £150 for tobacco, pipes and candles. In May, 1841, the colony was removed from the jurisdiction of New South Wales, and declared independent.

Many persons now sought Crown grants for land said to have been previously bought of the natives. The Governor would not sanction them. The unchartered New Zealand Company demanded grants for 20,000,000 acres. The Crown consented, in May, 1841, to bestow the charter, and issue grants for four times as many acres as the company had spent pounds in colonisation. This very greatly reduced their claim, but it enabled the immigrants to get possession of their purchased land. Among other mistakes, the land of Wellington settlement was bought of the wrong tribe. Compensation had to be made to the natives on account of previous sales; and *disputes*, expulsions, and even murders took place in the *neighbourhood* of troublesome chiefs. In the *Wairoa Valley*, near Nelson, a surveyor, in 1843, attempted to

measure land without the observance of proper forms. The chief, Rangihæta, burned his hut, but returned his property. The surveyor came with a magistrate and force to seize him. The chief's wife was killed, and he, in revenge, murdered all the English party.

Captain Fitzroy was appointed Governor in 1843. He established the capital first at Russell, in the Bay of Islands, and afterwards at Auckland. At the first sale of land at Auckland, April 12, twenty-six acres fetched £21,000. With a large debt and small income, the Governor issued two-shilling assignats. To quiet the Maories, some land was purchased at two shillings an acre, but more afterwards at five shillings. This was to be re-sold at £1. But the natives began to doubt the sincerity of the English Government; for by some it was proposed to tax all their lands, and, by other English statesmen, to deprive them of all lands not actually cultivated by them. This led to the rebellion of Heki, Kawiti, and others. The Governor and the missionaries succeeded in making some northern chiefs, as Nene, or Tomata Waka, believe that the Queen would not break the treaty. But Heki cut down the flagstaff at Korararika, in the Bay of Islands, in July, 1844. The offence was repeated in January, 1845. War was declared. The English forces were defeated on March 11th, at Korararika. In an attack upon Heki's fort Okaehau, June 30th, one-sixth of the soldiers were killed. Ten days after, the Pah was secretly entered, while the unsuspecting natives were at church outside. In this war, Tomata Waka fought for the English. He and Heki agreed not to hurt women and children, and not to stop supplies. Chivalrous and generous acts were performed by both men. Captured friends of each were released. Heki once came alone, by permission, into the midst of Tomata's Pah, to visit and pray with a dying relative. Governor Grey arrived in 1845, and, by his prudence and clemency, restored peace to New Zealand. Honi Heki became his personal friend. The correspondence between the two was a christian and an affectionate one. The warrior died of consumption, in August, 1850.

The formation of the New Zealand Company gave the first great impetus to emigration. Their districts were in the southern part of the northern island, and the northern part of the middle one, embracing one fourth of the one and one fifth of the other, including Taranaki, Port Nicholson, Nelson, and Otago districts. Involved in debt, the company had to surrender their charter to the Crown in 1852. In 1840, a French Company settled in part of Banks' Peninsula; they were bought out. In 1849, a Church of England association, with two millions of acres attempted the formation of the model Canterbury Colony. It proved a failure. The country land was sold at £3 an acre, and town lots for £24 each; of which money one sixth was to pay for the original cost, one sixth for survey and roads, two sixths for emigration purposes, and the rest for churches and schools. By the charter one sixth part of the proceeds of sales was to go to the English Treasury. In default of this payment of £4,500, the company forfeited their control of the lands of the district in December, 1852. A similar attempt to establish a Sec-tarian colony was made by the Free Church of Scotland, with 400,000 acres at Port Otago; where the land was to be sold for £2 an acre, of which one eighth went to the support of religion and education, one fourth for surveys, one fourth for the cost of the land to the New Zealand Company, and the balance for emigration. But they were unable to complete the terms of their engagement with the English Government in 1852. Thus the three associations were virtually closed the same year. The Otago land now sells for 10s. an acre.

Captain Hobson dying in 1842, the Colonial Secretary, Mr. Shortland, administered till the arrival of Captain Fitzroy as Governor in 1843. Captain Grey, afterwards Sir George Grey, late Governor of South Australia, and explorer of Western Australia, was nominated Governor in Chief of New Zealand in 1846, and Mr. Eyre, the bold overlander from South Australia to Western Australia, was appointed Lieutenant-Governor under him. In 1852 *it was determined* that there should be, under a Governor *in Chief*, six Superintendents, elected by the people. The

six provinces of Auckland, Wellington, Canterbury, Nelson, Otago, and New Plymouth, have now separate legislatures, subject to the central legislature at Auckland, in whose control the lands are placed. The Maories, as well as English, have liberty as citizens to be electors. The first six Superintendents were; for Auckland, Lieutenant-Colonel Wynyard; for Wellington, T. E. Featherstone, Esq.; for Nelson, A. Stafford, Esq.; for Canterbury, J. E. Fitzgerald, Esq.; for Otago, Captain Cargill; and for Taranaki, W. Brown, Esq. Upon the departure of Governor Grey in 1855, Colonel Wynyard acted until the arrival of Governor Colonel Gore Brown. The New Zealand settlers have had a more liberal Government than the Australians. The gold of New South Wales and Victoria has presented a fine market for the agriculturists of New Zealand.

CLIMATE.

The climate of New Zealand is colder than that of Australia in the same latitude. The atmosphere is a moist one, swamps are common, and winds very boisterous. Though without hot winds it is not without dust. The country is more agricultural than pastoral. In the north, the soil is sandy, about Wellington rocky, in Taranaki fertile. The Canterbury and Otago plains are well grassed. On the western side of the Snowy Mountains it rains almost incessantly; scrub and rock cover the ground. The good soil of New Zealand is in patches beside rivers. The excessive moisture and density of vegetation render travelling unpleasant in New Zealand. The cold of Otago is sometimes severe. Auckland has a mean temperature of 59°. Its winter is as mild as at Sydney, and its summer is not hotter than in Hobart Town. Few parts of the world are so delightful for a residence as Taranaki, under the shade of the romantic looking, snowy Mount Egmont; with the absence of mosquitoes and sand

fies it would be indeed a paradise. Earthquakes have been repeatedly felt in New Zealand. One occurred at Wellington on Sunday Night, October 16, 1848, in the midst of a violent storm of rain. Houses and chapels reeled and fell. The hills rocked to and fro. The ground quivered like jelly. The noise was compared to the crushing of ten thousand forests at once. The shock lasted but one minute. The next great shocks came after intervals of 38 hours each. Smaller shocks followed for months after. Another considerable earthquake happened on January 23, 1853, which was simultaneously felt at Wellington, Nelson, New Plymouth, Auckland, and Canterbury, occasioning some loss of life.

GEOLOGY OF NEW ZEALAND.

The principal features of New Zealand are unlike those of Australia. There are extensive swamps, many rivers, dense forests, pumice soil, and active volcanoes. The fundamental rock, as elsewhere, is slate. The surface of the Northern island is especially volcanic. The Alps of the Middle island are of similar primitive formation to the Victoria Dividing Range.

Commencing at the north of the Northern island, we have volcanic conglomerate at Cape Maria Van Diemen, and down below the Bay of Islands, with anthracite at North Cape. From the Bay across to Hokianga are several volcanic cones. On the edge of one crater are remains of a Kauri Forest, illustrating a time of peace and subsequent convulsion again. Hot springs are observed at Waimate, and cornelian pebbles in Hokianga sand. Passing slate ranges the basaltic plains of Waitemata are approached. A wall of basalt 200 feet high there pierces through the slate and sandstone. Auckland is on a Tertiary basin; the cliffs are either of soft horizontal sandstone, or conglomerate with fossil wood. Twenty *extinct volcanoes* surround the town, containing good lava *building stone*; one of the craters now contains a fine

kauri forest. The rough and volcanic nature of New Zealand led Mr. Dieffenbach, the geological explorer of that country, to declare that it was not yet finished for the occupancy of man.

Across the Frith of Thames from Auckland is Coromandel Peninsula, having Cape Colville to the north, with Coromandel Harbour on one side, and Mercury Bay on the other. This district is auriferous. The ranges are of clayslate, with intrusive trap and quartz. The same formation is contained in the Thames chain. Gold was found at Coromandel Harbour in 1851. Copper and lead are also found there; the copper ore of Kawau Isle by Cape Colville contains one third sulphur. Magnesia occurs on some islands near Auckland. The Valley of the Thames, 60 miles long by 3 broad, and only 6 feet above high water level, is of alluvial deposit with veins of greenstone. In the Bay of Plenty are evidences of volcanic action in the obsidian of Meyer's Island, the sulphur of the ever smoking White Island, and the veins of greenstone through the marly limestone of Tauranga Bay. The western and southern country is of slate traversed as at Port Nicholson with dykes of basaltic greenstone. There are terraces of trap boulders at Cape Palliser fifty feet high. The islands of Cook's Straits are of basalt.

The interior of the Northern Island is of great geological interest. The noble Waikato River rushes through hills of light pumice, and through rises of more ancient lava, and volcanic conglomerate. In its valley is an area of 100 square miles of anthracitic coal, fibrous and shining. The sandstone is not sufficiently cemented to be useful. In the lower lands are three sorts of oolitic limestone, from the size of a poppy seed to that of a pea, which rest on an argillaceous rock abounding in marine fossils. Under that again is a red sandstone without fossils, which becomes micaceous when in contact with the ancient Silurian rocks beneath. The district about the Rotorua Lakes is very interesting. Going from the Bay of Plenty a sandstone is passed over which abounds in salt. Many sulphurous, saline and alkaline springs are seen, with

steaming fountains and boiling mud ponds. The natives sit in the warm sulphur springs as a cure for diseases of the skin. One of the lakes is the site of a Totara forest which sunk during the eruption. In the district is a heartless plain rendered absolutely sterile with the quantity of salt in the soil; in the midst of this is a brimstone valley, with roaring caverns, and sulphurous and boiling ponds. Around the sides of Rota rua are jasper like deposits. High cliffs of volcanic trachyte bound the basin of Lake Taupo, an ancient crater; near it are springs with flint in solution. In proximity to this lake rises the burning mountain of Tongariro, of which there are frequent eruptions, with issues of black compact lava, and from which there are constant jets of steam, depositing siliceous matter; the crater is a quarter of a mile broad. The rock consists of porphyry and other trappean formations. The tradition of the natives asserts that Lake Maupere occupies the place of that which was recently a populous neighbourhood. A plateau district extends from Rota rua to Cook's Strait.

On the eastern side of Northern Island more of the tertiary development appears, consisting of clay rock and sandstone, with recent fossils. About 50 miles south-east of Cape Egmont is the port Waingongoro, in the sand flat of which an abundance of fossil remains has been disinterred. There are the bones of the Moa, a gigantic apteryx, or wingless bird, called also the Dinornis, of different species, from 4 to 12 feet high. The upper jaw indicates its power of grubbing up roots. Its leg-bones were of great size and strength. The Palapteryx was more like an Emu, with a broader skull than that of the Dinornis, and a greater development of the organs of smelling. The Notornis, or Southern Bird, had a short head, and a sharp strong beak. It must have been like the Porphyrio, being a sort of swamp-hen. Along with all these, there were found, also, at Waingongoro, fossil seals and nocturnal parrots, with bones of dogs and existing birds. But, more curious than all, there were the calcined bones of men, spear heads, and whalebone weapons; *proving that the Moa was living at the time of some*

ancient cannibal feast. Many Moa eggs have been discovered, being a yard in circumference. There are limestone caves on the western coast also containing fossil bones of birds, &c. This limestone is said to consist of fossil animalculæ similar to those of English chalk. Mount Egmont is scoriaceous. The plain near is covered with lava boulders, the decomposition of which forms the fine soil of Taranaki. Rich magnetic ore is abundant by Cape Egmont. Near New Plymouth are mounds of silicious, calcareous sand, consisting of the fossil-siliceous shields of infusorial animalculæ. Excellent limestone and coal are known at the Mokau River, 50 miles north of New Plymouth. North again of this, at Kawia Harbour, the limestone rocks contain *Terebratula* shells in a perfect state, with *Ostrea* a foot long. Titaniferous iron-sand abounds at the mouths of the western rivers. Blue slate crops out at Hokianga Harbour.

Little is known of the Middle Island. No volcano, extinct or active, has been seen there. The rocks of the western coast are primitive. Throughout the island is the great chain of the Snowy or Southern Alps, which are of clay slate and granite, with dykes of quartz, greenstone, porphyry, &c. The spurs are numerous, and of the same character. The eastern flanks are partly covered with a volcanic grit. The plains, as in Canterbury, are of a loam upon a quartz pebbly gravel. The expedition of Dr. Smith, from Otago, will reveal much of this unknown land. On the north side of Middle Island, by Cook's Strait, the rocks are of clay slate traversed by quartz, serpentine, and greenstone veins. In the neighbourhood of Nelson, by Blind and Massacre bays, good bituminous coal is found. An imperfect coal, at Massacre Bay, is overlaid by quartz gravel, but in fossiliferous sandstone and limestone. Near Cape Campbell, the north-east corner, is silicified vegetable clay with chalky limestone. All the great plains of Middle Island are covered with rounded quartz pebbles. At Dusky Bay is mica slate with garnets; and at Milford Haven are nephrite, serpentine, and limestone with trap. At Preservation Harbour, near *Chalky Bay*, is a coal, slightly bituminous, found associated

with shales, sandstone, and basalt veins. Imperfect coal, with silicified wood, also occurs on the plains of Canterbury, on the flanks of Mount Grey, in fossiliferous blue clay alternating with recent sandstone. Banks' Peninsula is a mass of basaltic hills, presenting the appearance of a star-fish. Claystone porphyry is the summit of Mount Pleasant, Port Victoria. Amygdaloidal trap with mesole crystals may be seen on Quail Island; Port Victoria; also, volcanic tufa between ranges of basaltic pillars.

Mr. Mantell made a geological survey of the coast from Canterbury to Otago. A spur from the Alps, with slate and quartz, reaches the sea at Waikhoura. South of this is a yellow, porous sandstone, containing the echinus, terebratula, teeth of shark, &c.; cemented by masses of foraminifera animalculæ. Lignite and rough coal appear halfway along the beach. An earth, from Lake Waihora, was sent to England for magnesia; it turned out to be simply fossil animalculæ. 30 miles north of Otago, garnets are seen in hornblendic rock. South of this are tertiary blue clays with existing fossils. A mineral curiosity is observed here, called "Nine Pins," or "Vulcan's Foundry." They are septarian boulders, washed out of the clay cliffs; the septaria are fossil testaceous tubes. These stones, from a few inches to 12 feet in diameter, would form a good cement. In this formation, the Moa bones again appear. Once more a spur of slate and trap extends to the shore. Over that, we gain the blue clay, as before. In the vegetable deposit of Waikowaiti, 17 miles north of Otago, is another immense Moa collection. The bed, upon blue clay, was once a submerged swamp. One specimen was obtained when in an upright position, as if mired in the morass. Along with the Moa are the bones of the existing teal, penguin, and parrot. It would appear not improbable that animals of such vast size as formerly lived in New Zealand had a larger range of country than is now presented, embracing a portion of the now submerged southern continent.

The celebrated Greenstone Lakes, west of Otago, furnished the natives with greenstone or serpentine axes and spear-heads. The country around Otago is crystalline,

chiefly hornblendic granite. Carbonate of lime runs in veins through the clay slate of Otago. Imperfect coal, or lignite, is found at Dunedin. Towards the Molyneux River, by the shore, is a rock in which several seams of bituminous coal appear, but which are unapproachable; one seam is 16 feet thick. At the mouth of the Molyneux, the bones of the *Dinornis* and other fossil birds are again found in great abundance. A small species of the *Notornis* yet exists in the Middle Island. Its head, breast, and wings are blue, its abdomen and thighs bluish-black, and its bill and feet bright red; the middle toe of the bird is three inches long.

THE ABORIGINES OF AUSTRALIA.

They have been styled by some "human monkeys," and have been thought proper objects for the exercise of cruelty. Sir T. L. Mitchell does not look so contemptuously upon their intellect when he says, "They are as apt and intelligent as any other race of men I am acquainted with." Mr. Eyre, Captain Sturt, Leichhardt and others, who have come much in contact with them, have testified of their mental capacity and social good qualities. Mr. Westgarth properly observes, "The untutored savage shines with a lustre of his own, which appears so much superior, as in others it is manifestly inferior in the comparison with civilized man." It is not fair to judge of the aborigines by ourselves. Their roving life, their love of freedom and fun, and the supply of all their natural wants, are antagonistic to their becoming civilized. Without the anxieties of our more refined existence, they have no relish for our pleasures any more than our work. They have no need to cultivate the ground and build houses like the New Zealanders, who are obliged to settle together from the different character of their food.

Physically, they have dark brown skin, large eyes, massive foreheads, broad noses, wide mouths, large white teeth, and long sinewy limbs. The Tasmanian blacks have long woolly hair. Native children are laughing, happy

creatures; as from the nature of native food mastication is so essential, they often depend upon their mothers' milk till they are three or four years old. Their mothers are not always so well treated as themselves; children are rarely beaten, but women sometimes get the waddie. The females have to collect roots, &c., for food, while their lords are hunting or playing. Polygamy is allowed, but only among the favoured old men. Young men occasionally exchange their sisters or mother for a wife. Both sexes adorn themselves with cicatrices or scars, but the men are more vain than the women, being fond of emu and cockatoo feathers in their hair, daubing their bodies with ochre, &c. On the north-east coast they add to their beauty by thrusting a piece of wood or bone through the septum of their nose. The dress is simple enough, being of skins; some tribes go wholly naked. The Port Lincoln men wear a band of twisted human hair. Their weapons are the spear, waddie or club, throwing stick, and boomerang for throwing, though the two last were unknown in Tasmania. The boomerang was known to the ancient Egyptians, and may be regarded as the last token of former civilization. The native wars were frequent, but not bloody. The making of a young man or warrior is a solemn and trying ceremony. Food is abundant, consisting of kangaroos, opossums, emus and other birds, fish, seals, eggs, shellfish, turtles, grubs, fruits, seeds, and roots. They bake the turtle in the shell to save the gravy. Some of these articles the women must not eat; others are denied to young men; the old men eat what they please. Sturt and Leichhardt admired the flavour of their roast duck.

The diseases of the natives were few before the white man came, and for these they had simple cures. They bled for inflammation, fomented for diarrhoea, shampooed for rheumatism, and employed cold water in fevers. Madness and suicide are unknown, and deformities are very seldom seen. Their doctors pretend by kneading to extract the cause of pain, pieces of wood and bone. In 1789 a disease like the small pox swept off vast numbers. *Natural death* is not believed in; an evil spirit or one of *another tribe* is considered the secret murderer. This is

a frequent cause of war. The name of the deceased is never mentioned. Mourning is manifested by loud wailing, and plastering the head with pipe-clay, the women shaving their heads. The dead bodies are burnt or buried; though some in North Australia place the corpse in the paper bark of the Tea tree, and deposit it in a hollow tree. Instances occur of loving mothers carrying the remains of their children in a basket behind them for many weeks. The aborigines have a kind of oligarchical government, the old men being authorities. British law now controls their conduct to each other. A native prison exists on Rottnest Island, Swan River. Being in tribes they never roamed far, for fear of trespassing. In North Australia there are castes, and fixed intermarriages. The practice of circumcision was observed by Leichhardt in the north, and by Eyre in the south. Their languages differ considerably, though they may be derived from one stock. Almost every word ends in a vowel. They have names for all plants.

Their religion is a puzzle. Mr. Parker, the missionary Protector, says that they believe in the existence of their souls after death. The missionary Schmidt declares distinctly, "They have no idea of a Divine Being." Mr. Bunce, who knows the natives of north, east, south, and west Australia, asserts that he never met with an instance of a black fellow's belief in a hereafter. The many absurd stories they tell are either to amuse or astonish the whites. Thus, some say that they turn into kangaroos, others into white fellows, or go to stars, or visit their fathers in an island, &c; others, again, bluntly tell us they "all the same dog." The Melbourne tribe were said to have worshipped Orion and the Pleides. Corrobories are considered to be often associated with religious rites; many of their dances have unexplained peculiarities. Intercourse with Europeans has not improved their morals. Intoxicating liquors have led to many murders. Many worthy efforts have been made to raise the degraded creatures. From the year 1821 to the present, the several colonial governments have aided *Christian missions* among them, and in Port Phillip and *South Australia* protectors were appointed to watch over

their interests, but all in vain. The institutions of Lake Macquarie, Moreton Bay, Wellington Valley, Buntingdale, and Adelaide have all failed. The Roman Catholic missionaries are struggling on with the aborigines of Frazer's Island, and Archdeacon Hale is hoping on with his community near Port Lincoln. Mr. Parker judiciously observes that their opposition to our religion arises not from stupidity but sensuality. But the conservatism of their own laws and customs powerfully operates as a barrier to their advancement. Strzelecki counsels us to treat them kindly, leave them to their habits, and let them alone. Yet Christians would ever desire that they receive the benign and elevating truths of their religion. The Australians and Fuegians are about the only people in the world without a faith.

The race is fast dying out. European diseases and habits are fast destroying them. None remain of the Sydney tribe, which was once known to muster 400. Without doubt frightful atrocities have been practised upon them. Mr. Parker considers that fourteen years ago there were 7,500 in Port Phillip, and that there are now 2,500. The protectors reported the decrease 20 per cent. in five years. Seldom do native women bear more than two children. Half castes are generally destroyed. The aborigines have lost heart, and declare that they do not care, because they have now no country. Strzelecki contends that the females are barren after dwelling with whites; Mr. Parker proves an exception to this. The adults in the civilized parts are about three or four to one child.

The fate of the Tasmanian natives is sad indeed. The narrative of the celebrated Black War is given in the history of that country. Once they numbered by thousands; fifteen, who are all adults, only remain. 200, speaking ten languages, were removed to Flinder's Island in the Straits. The Polish Count counted 54 in 1842. Since that they have gradually died off, though every *attention* and kindness was shown them. They were *removed*, at their own request, to their native land *once more*, and were stationed at Oyster Cove, near Ho-

bart Town. Most of them read and write, and all were well acquainted with Christianity. Interesting statements are given of the happy, christian deaths of several of them.

NATURAL HISTORY OF AUSTRALIA.

BIRDS.—Australia possesses 45 genera, of which 35 are purely its own. Of 600 species, 300 are in Victoria. There are nearly 10,000 species in the world; 500 are in Europe. Though without woodpeckers and vultures, we have many parrots and honey eaters. The Procellaria and the nocturnal birds are more numerous than elsewhere. We have a large number of fine singing birds, and others of most gorgeous plumage.

The largest birds are the Emu, and Native companion or *Ardea*; the male attends to the eggs. The *Psittacidae* are of the parrot family. The Honey-eating parrakeets are more in number than the Grassfeeders. The black, and the white Cockatoos are in vast flocks; the Pheasant cockatoo skips about like a monkey. The Brush turkey, or *Talegalla*, has a wattle or fleshy pendant from the neck; it lays its eggs in a heap of sand and decayed vegetable matter. The mound thus made by the Mountain Pheasant, or *Leipoa*, of North Australia, is often 50 feet round. The Bower bird is either satin or spotted, making a play-ground or bower of shells, feathers, &c., which is not a nest, but through which the male and female chase one another. There are large Wedge-tailed and white-bellied Sea Eagles. Falcons or hawks are many. The Black Swan has a melodious note; it is not found north of the Mackenzie. The Cape Barren Island goose is a fine bird. The *Porphyrion* is a diver, with red bill, blue breast and black tail. There are Penguins, Pelicans, Rails, Ferns, Shags, Albatrosses, Grebes, Musk ducks, Herons, Cranes, Water hens, Snipes, Stilts, Dotterills, and turned up bill *Avosettes*.

The *Laughing Jackass*, or *Dacelo*, is a king-fisher, has a

heart-shaped tongue, and a merry laughing note; it is brown and green, and feeds on fish, snakes, &c. The Mawepawk or Podargus is a sort of owl. Among the Meliphagidæ or honey-eaters, the Regent-bird has a golden head and black body; the Bell-bird or Miner has a splendid note; other honey-eaters have a brush tongue, and tail fringed with gold. The Wattle bird, with its pendants, makes a noise like a person vomiting; it feeds on the honey of the Banksia. The Menura, or Lyre bird of Victoria, has a magnificent tail like a Bird of Paradise: after pairing, the male loses his fine colours. Pigeons are often in vast flocks. Sturt found Ground Doves in the desert sitting on the burning rock. There are Ventriloquist and Harlequin doves in the north. The Cuckoo arrives in New South Wales in October, and leaves in January. Barking birds, Grass singing larks, Banded Thickheads, White eye-browed Robins, Whistling Ducks and Clucking night birds are in North Australia. Magpies, Swallows, and Crows are very common; the Piping crow is the musical Organ bird. The Tasmanian Superb Warbler is a Malurus. In the island, also, are Black Caps, Cobbler's Awa, Robins, Quails, Nocturnal Goatsuckers, Fire-tail finches, Emu-wrens, and the elegant Diamond birds; the latter, Pardalotus, build their nests under ground. The little Emu wren has seven feathers to its tail, like the emu's feathers. The Ground Dove makes a loud whirring noise. The Friar, Poor Soldier, or Leatherhead, is a chattering honey eater; Myzantha, a similar bird, imitates the sound *four o'clock*. The Coachwhip of New South Wales, called so from its note, has a black head and breast. The Rifle-bird, Ptiloris, is gorgeously clothed in green, velvet-black, and lilac. There are twenty species of finches. The splendid fire-tail is a finch. The Painted finch of North Australia has plain upper part, but black and red underneath. The Wattled Peewit alarms with a scream. The Mutton bird is the petrel of the islands in Bass's Straits. They are so many, as even to darken the *air*. Oil is obtained from their craws, and the soft *feathers serve to stuff beds*. There are Day Owls in South Australia. No two Cat-birds can meet without fighting.

A flock of the *Tribonyx*, in one night, destroyed whole fields of corn, near Adelaide.

QUADRUPEDS.—Of 90 species, 70 are marsupial, or pouch-bearing. This family is divided into the *Macropus*, or kangaroo kind; the *Hypsiprumnus*, or kangaroo rat; the *Didelphis*, or opossum; the *Perameles* or bandicoot; the *Phascolomys*, or wombat; and the *Monatremata*, including the porcupine and platypus. The Kangaroos have 28 teeth, of which six are cutting above and two below. There are 40 species of them. There is the grey of Tasmania, and the red of North Australia. The five toes on the fore feet have nails; the hind feet have a central toe and a shorter one with nails. One in the north has a nail at the end of its tail. The Euro, by Lake Torrens, reaches six feet in height. There are no kangaroos north of lat 28° , in Sturt's Desert. The Kangaroo rat has dog-teeth. The Building little rat, of the Darling, builds a pretty twig nest. The Rabbit rat, of New South Wales, likes sugar. The Kangaroo mouse has thick fur. The nocturnal Wallaby is a kangaroo. The Opossum has 50 teeth, including 18 cutting-teeth. The *Petaurus*, or Flying Phalanger, is the Flying Opossum, or squirrel; there are five species, of which the smallest is the Flying Mouse, two inches long. In North Australia it is the Flying Fox. There are no opossums in Sturt's Desert. The *Didelphis* feeds on fruit, berries, and bark, and has a prehensile tail. The *Kaola*, or *Phascolarctos*, with 50 teeth, is a tail-less phalanger, and is called the Native Sloth, or burrowing Bear or Monkey. It is nocturnal, with small ears and no regular pouch. It barks, and it smells very badly. The Bandicoot is the link between the opossum and the kangaroo. The rabbit-like *Talpero* of the desert is a *Perameles*. It has a long snout, a rabbit-like gait, and 48 teeth. The Wombat, or pig, is a stupid, flat-headed, thick-haired, root-gathering burrower. The burrowing Porcupine Anteater, or *Echidna*, is a foot long, and has a long snout, short and thick legs, no teeth, small eyes, a waddling gait, and yellow spines tipped with black. The mother sits on the shell-less eggs; when hatched, the little one attaches itself to the nipple of the pouch. The duck-billed *Platypus*, or *O*

thorhynchus, is amphibious. Its home is a hole by a stream. It has two horny teeth without root, a membrane and five toes, flat tail, short hind feet turned backward, small eyes, and no external ear. It lays two shell-less eggs, and yet suckles its young. It is 18 inches long; the male has a spur. Like the porcupine, it rolls itself up. The natives will not eat of it, but partake of the echidna. The young of marsupial animals are born in an imperfect state through the uterus, and are moved by the mother so as to reach the teat; when they get their sight they loosen from the teat. The two marsupial bones support the pouch, compress the mammary gland, and defend the bowels from the pressure of the young in the pouch.

The *Dasyurus* family is carnivorous. Of this, are the *Thylacinus* or Tasmanian Tiger, five feet long, with short legs and striped body; the *Dasyurus ursinus*, or Tasmanian Devil, with its short fur, thick tail, black body, and white bands on the chest and haunches; the Tiger Cat, with its weasel-legs, its brown skin and white spots; the Native Cat, black or grey, with white spots. All these *Dasyuri*, or hairy-tailed beasts, are very fierce, bloodthirsty, cowardly and nocturnal. The Dingo, or Wild Dog, is not in Tasmania. It is half fox and half wolf, with a reddish-brown colour, bushy red-tail, long thick hair, with white in the tail. It was doubtless introduced with the northern Buffalo, by the Malays. The insectivorous Shrew is the native Mole.

Lizards and snakes abound. The King lizard of North Australia has an expanding tippet round its neck. The Moloch lizard has horns on its head and spines on the back. The harmless Guana feeds on insects, &c.; it can expand its pouch. The Coorong snake is 12 feet long; the Black and Diamond snakes are also very poisonous. We have Alligators in the northern rivers 15 feet long; and Vampire Bats 3 feet across the wings. The Tarantula has poisonous saliva. The little Native bee has no sting. The *noisy Cicadæ* spring from a grub which lives several years. The Kangaroo-flies, Sandflies, and Mosquitoes, trouble in the north. The grasshopper differs from the locust in

having longer and slenderer legs and antennæ. The White Ants of North Australia build hills nearly 20 feet high.

BOTANY OF AUSTRALIA.

The Botany of these colonies is peculiar. Plants of one colony are very similar to those of another. Of course North Australia possesses tropical plants which could not grow in Tasmania. The number of species is conjectured to be about 7,000. Those of Victoria are put down by Dr. Mueller at 1680 species, of 680 genera; of which the proportion of Dicotyledonous to Monocotyledonous was as 7 to 2. Only one-fourth of the Cryptogamic are found in other countries. The Leguminosæ and Compositæ form one-fourth of our plants. The Proteaceæ are very numerous. These have a hardy woody texture of leaves, with four stamens, and irregular tubular calyxes; they are chiefly *Grevillea*, *Hakea*, *Banksia*, and *Persoonia*. Of 700 species, half are on or near lat. 33°. The Salsolaceous prevail on the desert plains; they contain 1-20 of their weight in salt. The leafstalks of the Australian trees are dilated, and set edgewise on stems; the glands are on both sides of the leaf. Space compels a very cursory view of the subject.

The great forest trees belong to the Eucalypti, of which there are 100 species, though Mr. Swainson talks of 400. The chief of these are the blue, red, flooded, white, spotted, manna, poplar, and mountain Gum trees; the Yarra, Box, West Australian Mahogany, and the Iron bark, are varieties of Eucalypti. The Peppermint is the *Eucalyptus piperita*; the Stringy bark, the *E. robusta*. The wood of these is very heavy and enduring, the best for ship building. The Stringybark strips in fibres, the Gum in ribands, and the Ironbark in masses. There are sixty species of great timber trees. The manna, dropping chiefly from dwarf Peppermints, is condensed by the Cicadæ, or Colonial Locusts. The Mallee scrub, or dwarf *Eucalyptus*, rises from a knotted root in shoots of 10 or feet long. There are three varieties; one with bi

green leaves, whose wood is used for spears; another with darker leaves; and the red or water mallee, from the cut rootlets of which water may be procured; five pints were got in ten minutes. There are 120 species of *Acacia*: as,—the Wattle, Mimosa, and Blackwood or Lightwood. Some of the *Acacias* are 150 feet high. The *Casuarinæ*, or He and She Oak, have no leaves, but long knotted twigs at the end of branches. The He oak is *Cas. stricta*, or upright; the She oak is *C. tortulosa*, or bending. The Silk Oak is a *Grevillea*. The Cherry tree, or *Exocarpus*, with the stone outside the fruit, is leafless like the *Casuarina*; both are considered by Mr. Swainson the true Pines of Australia, rapidly becoming extinct, though he mentions 200 species in Victoria, and 60 peculiar to Tasmania.

The Pines are various. The Norfolk Island pine or *Araucaria*, reaches 200 feet. The Moreton Bay is an *Altingia* of Cunningham's. The North Australian pine is not an *Araucaria*, but a *Callitris*, cypress-like. The Murray Pine is often 40 feet. There are Mountain, Coast, Desert, and Dwarf Pines. The Huon Pine of Tasmania, or *Dacrydium cupressinum*, is very valuable for cabinet work; the Oyster Bay species is not so fine. The Palms extend down to the mouth of the Snowy River, latitude $37\frac{1}{4}^{\circ}$. The *Corypha* Palm of New South Wales is 80 feet high; and the *Seaforthia* of Port Macquarie is 40 feet. The head of the Cabbage-palm is an excellent vegetable. The *Pandanus* or Screw-palm grows near the sea, and has clusters of red pulpy fruit. Though New Zealand is the land of ferns, having 140 species, yet there are thirty kinds in Victoria. The splendid Tree Ferns, *Alsophila Australis*, and *Dicksonia Antarctica*, 12 to 30 feet high, are found in the gullies of Illawarra, of the Latrobe and Snowy Rivers, and of the mountains of Tasmania. The ferns of Polynesia are as 1 to 3 of other plants; in tropical Australia they are 1 to 24.

The *Xanthorrhæa* or Grass-tree throws up a spike of flowers, 5 to 8 feet high; the resin in a balsam. The grass-tree of North Australia and the *Freycinetia*, has scarlet centre flowers. Extensive grass-tree plains are in Cape Otway district. The *Banksia*, with its rigid leaves

and bottle brush flowers, flourishes in sandy soil; in West Australia the blossom is red, and elsewhere yellow. The *Hakea* is like the *Banksia*, and so is the prickly *Isopogon* of Tasmania. The *Melaleuca* or Tea Tree has rigid leaves and many snowy flowers. The Cedar of New South Wales will not thrive when removed from associate native plants. The *Sassafras* or *Atherospermum* is a tall pyramidal tree, whose bark is medicinal. The Beech of Cunningham reaches 100 feet. The New South Wales Nettle tree is 20 feet. The *Corijong*, 40 feet high, has the form of an oak and the foliage of a poplar, with waxy flowers; its tenacious bark is worked into native nets. The Dogwood, *Pomaderris*, has fragrant orange blossoms. The Bread-fruit of Norfolk Island runs 20 feet, and the White Oak 80 feet. The Moreton Bay Chestnut, *Castanospermum*, something like the walnut, has very red blossoms. The sea-side Mangroves bear an edible fruit, the seeds of which germinate on the tree, sending down rootlets. The Tamarind tree of the Tweed has clusters of acid fruit. The native Pear has a fruit of the size of the English fruit, but being like a lump of wood with a thick skin; it grows on Mount Wellington, and on the Blue Mountains.

The flats by the Murray River have much scrub. The Mallee has been described. The *Polygonum* is a small Tea tree, but very harsh and compact. The Myall is a weeping *Acacia*. The Murray Holly is a *Grevillea*. The Good Mother of the natives, is a Tea tree, whose seeds remain for many months attached to the stem. The Apple tree is a sort of myrtle. The Murray Cherry has a fleshy white fruit. The *Ballardiera* of the scrub and of Kangaroo island has yellow flowers and climbing branches. Mr. Bunce found a flower, the bottom part of which was dead, and the top fresh. There are also, a cotton like Salt bush, a Weeping *Acacia*, and Cinnamon. A sub-tropical desert flora extends to Lake Albert.

Among the flowers of South Eastern Australia are the gorgeous Waratah, or *Telopea*, the Tasmanian Tulip tree, growing like the rhododendron 20 to 30 feet high. It is a mountain laurel like shrub, with heads of brilliant scarlet, waxy flowers four inches across. The blue berry

of the *Dianella* hang in festoons. The trailing *Kennedia* is a beautiful crimson creeper. The pink *Lotus* of the *Campaspe* has a sweet smell. The *White Star* of *Bethlehem* is near *Melbourne*. Everlasting flowers are very common. The graceful native *Indigo* is of a lilac colour. The *Goodia* is a native laburnum. The *Correa Latrobeana* is a grand flower, though the finest in *Victoria* is the *Victorian Grevillea*. The Coral like tree of the *Darling* has a red stalk, and seeds like gunpowder. The *Native Tobacco* has a trumpet flower. An *Oil fruit tree* is found on *Wilson's Promontory*, and a bitter *Melon* on the *Grampians*. The *Gunyang* fruit of the *Gipps Land* sand ridges is of the taste and size of a *Cape gooseberry*, on a sort of night-shade shrub 6 feet high. The *Persoonia* of *Port Phillip* is a prickly shrub with yellow bell-shaped blossoms. The *Stink plant*, *Zierria*, has white flowers; it is good for the headache. At the *Coorong* is the *Multro* or apple, like a tea tree. The *Spinifix* of the desert is a prickly shrub 4 feet high. There is a *Kidney Bean* on *Strzelecki Creek*. The *Sturtia*, or *Parrot's beak*, has brilliant scarlet and black blossoms. The *Musk plant*, *Eurybia*, is very fragrant. There are 150 species of the *Orchis*. The colours of *South Eastern Australian* flowers are chiefly yellow and white. The *Pimelea* has an acrid bark. The *Kangaroo apple* is a *Solanum*. The *Asters* are numerous. The *Mesembryanthemum* or *Pig face*, has a nutritious pulp. The *Boronia* is a heath-like plant. The *Epacris* is the representative of the heaths; there are 300 species of this beautiful flower. Of 553 species of heaths, 533 are peculiar to *Cape Colony*, and only 6 in *England*, and one in *Australia*. A very rare *Epacris* of our *Alps* is named after the scientific *Captain Clarke*, *Surveyor General* of *Victoria*. The *Rock Lily* has a spike of white flowers. The *Doryanthes Lily* of *New South Wales* has a head of large red blossoms. The *Fusanus* apple has a rough kernel. Our native *Currant* is a *Leupogen*. On the *Shoalhaven* is a native *Gooseberry*.

Of mountain plants, those of the *Buffalo range* differ from others of the *Grampians*. The *Victoria Alpines* are like the *Tasmanian*. The *Sterculea*, the *Fly trap*, the

Ranunculus, the icy but eatable Anistone, and the Tea Bœeckea are on our Alps. There are 28 English mosses in Australia. The Seaweeds are similar. The three Grasses are the Kangaroo, the north Barley grass, and the broad leaved Panicum or millet. The Native Bread is a fungus, found in large lumps.

North Australia is rich in its botany. The cherry does not extend beyond the Dawson; the iron bark beyond the Lynd, the myall beyond Peakrange. The Gulf flora is like the Malay isles. Dr. Leichhardt and Mr. Daniel Bunce are the great botanical authorities. The Bottle tree, 40 feet high, is a Sterculia, so bulging out as to be called the Gouty tree. It propagates by off shoots; it tastes like turnip. The Bunya, a pine 150 feet high, bears a scented nut which is pounded and roasted; it is found near Wide Bay. The Bricklow is a prickly, rigid leaved Acacia, forming dense scrubs. The Nonda is a wide spreading tree; emus feed on its astringent yellow plums. The Moreton Bay Fig tree is of immense height and size. The Burdekin Clustered fig reaches 60 feet. Cypress pines are on sandy rocks. The Cycas, 4 feet high, is on sandy soil, near the sea. The Zamia, Pitcher plant, Dragon-blood tree, Grevillea of many kinds, Sandalwood, Native tobacco, Filbert, Raspberry jam tree, the Emu peach, Rose apple, and the Crimson lily flourish in North Australia. The Native Melon, half an inch long on a prickly scrub, is refreshing. The Caper, very pungent, is the size of an apple. The roots of the large blue Waterlily are roasted by the Aborigines, though there is a poisonous water lily. The Fusanus is a pendulous fruit. The Mackenzie river Bean has a pod 6 inches long; Leichhardt's party were very sick from the coffee they made of it. The Nelumbium by lagoons of the Mackenzie, has one large leaf on a leaf-stalk 8 feet high, and a flower stalk of 10 feet; the blossom is pink, and the seeds of the cone nearly an inch long. The Cassia 15 feet high has yellow blossoms, and the Cotton tree of the Lynd has yellow blossoms and no leaves. The Grass of the Isaacs is 15 feet. The Zomatia, 3 feet high, has clusters of fragrant white blossoms. The Cinnamon gives a scent on crushing the pustules of volatile

oil. There is a Salt bush on the northern plains, which, when dried, rolls about like a floating balloon. There are vast iron bark and box forests. The Severn tree has red bitter fruit. Verbena prevails at the Lynd. The plants of the tropics, says Mr. Bunce, are richer and more fragrant than others.

Van Diemen's Land vegetation is very dense. A gum tree, near Brown's river, measures 104 feet in circumference. One near Hobart Town is 86 feet round at six feet from the ground, and 330 feet high without the top. There are Myrtles 150 feet high. The Richea or broad-leaved grass tree, 15 feet, has spike-like panicles of white flowers, which before opening, have the appearance of grains of rice. The Clematis is a white flowery climber. The Cranberry is an Epacris. The Prostanthera is the native lilac. The Lotus has pink pea flowers. There is a western Moss tree, 3 feet high. There are 60 species of the Leguminosa, or pea family in Tasmania. The Carpodontus, the Native rose, 12 feet, has white blossoms, which appear like snow when falling. The Agastachys has an admirable spike of white flowers at the end of every branch. The Blandfordia or Tasmanian lily, with its delicate drooping bells of orange and scarlet, loves moist and cool places. The Fern tree valleys of this lovely island are scenes of romantic beauty.

CLIMATE OF AUSTRALIA.

CLIMATE depends not only upon latitude, but upon the particular physical geography of countries. As Australia doubtless once possessed loftier ranges, or was divided into two or many portions by intersecting seas, or assumed a different geological feature, so would it exhibit corresponding changes of temperature and humidity. Had it a greater extent of tertiary formations and less of basalt, our rivers would be better fed with water. Now, as a vast body of compact land, with only coast ranges, we have great heat and evaporation, but little rain; yet local circumstances modify these. The Valley of the Murray has

a different climate from Gipps Land. But instead of a philosophical disquisition, we have space merely for a collection of facts.

HEAT.—The annual mean of Melbourne is 60° , that of London being 50° . During the past year the thermometer was below the freezing point two days, but above 80° fifty days. The mean of Port Albert, according to Lt. Slade, is 54° , having its heat modified by the sea and mountains. The highest month was 63° , and the lowest 43° . Dr. Davey records a singular coincidence on January 28 and 29, 1855; when the thermometer was 112° on each day at 1 o'clock, and 66° at the same hour of night. Sydney has, of course, a higher temperature than Melbourne, being 4° nearer the equator; the mean being 64° ; that of Adelaide is 65° . It is repeatedly 120° in the shade in a hot wind. Captain Sturt endured 157° in the sun, 134° in the shade. In the Polar regions the glass has indicated 90° below the freezing point, being 215 degrees difference. Hobart Town experienced, in a hot wind, 134° in the sun, in 1828. The mean temperature of Hobart Town was $54\frac{1}{2}^{\circ}$ for 1850; $54\frac{1}{2}^{\circ}$ for 1851; $53\frac{1}{2}^{\circ}$ for 1852. That for the last eight years was $53\frac{1}{2}^{\circ}$, the same as New York. But the summers are far hotter and winters far colder in the latter place than the former. The longest day in Hobart Town is $15\frac{1}{4}$ hours; the shortest, $8\frac{1}{4}$. The hot winds are more unpleasant than injurious. They are dry, and promote free evaporation of perspiration. Leichhardt lost them as he proceeded northward. They evidently proceed from the interior of the country.

RAIN.—Few rain gauges have been kept in the colonies. The only perfect meteorological tables are those of the Hobart Town Observatory, for several years under the superintendence of the distinguished Captain Kay. Mr. R. Brough Smyth is now making observations under the direction of the scientific and worthy Captain A. Clarke, Surveyor-General of Victoria. The mean annual quantity of rain at Melbourne for the last five years is 31 inches, that of London being 24. The amount for last November was $4\frac{1}{4}$ inches; for February 1 inch; and for the pre-

sent August, according to Mr. Smyth, less than 1 inch, while the evaporation of that winter month was 4 inches. In September the rain was 4 inches, and evaporation $3\frac{1}{2}$. The dryness of the air is 3 to 1 that of England. The dryness is ascertained by deducting the *dew-point* from the mean temperature. The dew-point is the point of saturation, at which rain begins to fall. The mean dew-point for last December was 50° ; for January $49\frac{1}{2}^{\circ}$; for August $50\frac{1}{2}^{\circ}$. On December 11, 1854, when the temperature was 99° , the dew-point was 35° ; and on January 29, 1855, when 109° , the latter was only 41° . When the south wind returned, and the glass fell to 78° , the dew-point rose to 58° . It has been said that had we no hot winds, we should have little or no rain. The hot wind returns to us, after going out to sea to procure water.

On the 18th of February, 1855, the evaporation at Melbourne amounted to one inch; but during the three summer months it reached to four feet two inches. Mr. Smyth for July gives rain 1.74 inches, and evaporation 1.45, with a northerly wind 24 days; and for August less rain, three times the evaporation, a northerly wind for 26 days, a dew-point of 42 degrees, and a mean temperature of $50\frac{1}{2}$ degrees. In 1842 at the Port Phillip Heads, there fell 48 inches; in 1848, 70 inches; and in 1849 only 21 inches. The mean of the barometer in Melbourne, is 29,960 inches; that of London being 29,892.

The mean of Sydney is 56 inches. In April, 1855, there were $8\frac{1}{2}$ inches in the first week. The mean of Port Macquarie was 47 inches in 1849; 81 in 1850; 92 in 1851. The sandy soil of New South Wales promotes excessive evaporation. North Australia has considerable moisture. Western Australia is too sandy to benefit much by extra rain. South Australia is a dry and thirsty land, from being too sheltered from the prevailing westerly breezes. The average for Adelaide is 19 inches. The rain was 20 inches in 1839; 24 in 1840; 20 in 1841; 17 in 1844; $18\frac{1}{2}$ in 1846; 25 in 1849; 33 in 1851; 35 in 1852; 21 in 1854. The western side of Tasmania is very *subject to heavy wet*. Hobart Town is on the wrong side *the lofty ranges* to have much rain; there fall there

only 14 inches in 1841; 23 in 1842; $13\frac{1}{2}$ in 1843; 26 in 1844; $16\frac{3}{4}$ in 1845; 22 in 1846; $14\frac{1}{2}$ in 1847; $23\frac{1}{2}$ in 1848; 33 in 1849; $14\frac{1}{2}$ in 1850; 18 in 1851; 23 in 1852; averaging only 20 inches in the year. The mean for Launceston, however, is 32; Circular Head, 35; Port Arthur, 45; Hampshire Hills, 65 inches. Dr. Pugh of Launceston, gives 31 inches for 1847, and 35 for 1848. In one day there were 4 inches of rain among the Hampshire Hills. The wettest month is November. The greatest humidity in the air is just before sunrise; the least, early after noon. As a contrast to the Australian rains, the following may be of interest: Tahiti, 150 inches; Cayenne, 250. Near Cape Horn, 150 inches were observed in 40 days. In the Khassa Hills, north of Calcutta, during the rainy half-year, there fell 550 inches, of which 25 came down in one day. In Siberia only 10 inches fall in the year.

WINDS.—The westerly breezes are very prominent. During the summer months in Melbourne, Dr. Davy found the south winds to be by far the most frequent. The north wind prevails in winter at Melbourne. Those at Bendigo were noticed by Mr. Ludwig Becker to be from the north-west. The most common wind at Launceston is that from N.W. Lt. Slade gives the following courses of currents of air at Alberton in 325 days, viz.:—W. 154 days; S.W. 28; E. 94; N.E. 16; N.W. 14; S. 10; S.E. 6; N. 3 days. The mercury falls when the wind is from N.E. and rises with S.W.

TIDES.—Though the tidal wave rises but a few feet, yet local causes produce different elevations. At Cape Palmerston the tide is 24 feet; Port Essington 16; Port Stephens 14; Western Port 14; Port Macquarie 8; Brisbane 8; Lewis's Channel, Corner Inlet, 8; Port Dalrymple 6 to 8; Kangaroo Island 6 to 8; Newcastle 7; Twofold Bay 6; Sydney 4 to 7; Port Lincoln 4 to 6; Port Phillip entrance 3 to 6. On the north-west coast the tide rises 37 feet. There is no tide running at Rockingham Bay. At Port Phillip Heads the tide is $7\frac{1}{2}$ hours earlier, and Moreton Bay $1\frac{1}{2}$ later than Sydney. The night tides are higher than the day tides at Sydney. The New South Wales alternating current is dependent on the Monsoon.

It tends to S.W. in summer within 20 miles of the coast, and then turns to N.E. The contrary takes place in winter. The current often runs two miles an hour. Two tides of 8 feet run in 24 hours in Spencer's Gulf; one of 4 feet in Port Lincoln.

STORMS.—Mr. Dobson, of Hobart Town, in his "Australian Cyclonology," describes a cyclone as an immense whirling eddy in the air, extending vertically from the surface of the atmosphere down to the earth, and moving bodily over the earth's surface. In the Southern Hemisphere, this eddy turns N.E. round to S.W., while in the north it is for N.W. to S.E. The W.N.E.S. Cyclonic points correspond to N.E.S.W. of the compass. These cyclones or hurricanes travel rapidly. That of October 13, 1850, in which the *Grecian* was lost at Adelaide, was felt the next day at Sydney. The cyclone of Swan River, July 8, reached Launceston, July 10. That of August 1843, moved 40 miles an hour. The storms begin with a north wind and end with a south one. One on May 12, 1851, produced the waterspout of the Burra Burra, which drove 1,500 persons houseless from their creek warrens. The great cyclone of June, 1851, proceeded from Swan River to Tasmania and New Zealand. The violent wind on Black Thursday, February 6, 1851, was not a cyclone. Its effects were remarkable. There were desolating fires, immense heat, and alarming darkness. Ships at sea were covered with burnt wood and dust. Some of the burnt leaves, &c., from Port Phillip were carried as far as Port Otago, New Zealand, the day following.

EARTHQUAKES.—Though occasionally slightly felt in Australia, are almost confined to New Zealand. On the morning of the 17th of September, 1855, a smart shock was felt in Melbourne, which split several walls of houses.

MAGNETISM.—The south magnetic pole is in lat. 75° S. by 154° E. At 160 miles distance the magnet dips 88° . The dip at Hobart Town is 70° ; at Wellington and Melbourne 67° ; at King George's Sound 64° ; at Adelaide 62° ; at Sydney 61° ; at Port Essington 35° . One line of no variation passes very irregularly through Japan, Canton, Bombay, Java, and Australia to the South

Pole. In the South Pacific Captain Ross observed the variation change from 114° to 40° in only 360 miles. The needle is progressing eastward. The variation of New Zealand in 1643 was 9° E.; it is now 14° E. Storm Bay was 3° in 1642, now it is 11° . The variation of Port Essington is $2\frac{1}{2}^{\circ}$ E.; King George's Sound, 3° W.; Adelaide, 7° E.; Portland Bay, 7° E.; King's Island, 9° E.; Melbourne, $9\frac{1}{2}^{\circ}$ E.; Launceston, 13° E.; Hobart Town, 10° E.; Sydney 10° E.; Auckland, 14° E.; in Sturt's Desert, 15° E. In London the variation was E. before 1660, it is now 24° W. The dip there was formerly $73\frac{1}{2}^{\circ}$, it is now $69\frac{1}{2}^{\circ}$. A great magnetic storm was observed at the same time. on September 25th, 1841, at China, Canada, Swan River, Sydney, and Hobart Town. A simultaneous disturbance of the needle was observed for thirteen days in Germany, Canada, and Hobart Town.

A P P E N D I X.

SOUTH AUSTRALIA—The proportion of females to males is higher than in any other Colony. Of the population in 1854, the labourers were as 1 in 17; farmers 1 in 16; shepherds 1 in 80; publicans 1 in 240; clergymen 1 in 870; lawyers 1 in 1416. The proportions of the several denominations are as follows:—Free Church, 1; Church of Scotland, 3; Congregationalists, 3; Roman Catholics, 6; Wesleyans, 8; Church of England, 24. In 1854 the imports were £538,972 and the exports £737,267. The revenue was 700,010. and the expenditure £630,813. Of the exports, copper brought £94,706, against £362,130 in 1850; whalebone and oil £100, against £8,815 in 1839; wool £182 399; and farm produce £412,000. The exports for 1838 were £5,040; in 1845, £131,800; 1850, £545,039; 1852, £736,890. The land sold in 1854 realized £394,511; the acres in crop were 130,000; the sheep 1,700,000.

TASMANIA.—The exports for 1854 were £1,483,02

and imports £2,604,680; the revenue 275,554, and expenditure £276,650. The acres in crop were 175,000. The Aborigines are five males and ten females.

NEW ZEALAND.—The revenue of Auckland province for the year ending June 1855, was £45,000. Their imports for last year were £38,320, and exports £30,166. The native produce in 1854 came to Auckland city in 1533 canoes, valued at £12,417. The revenue of Nelson province exceeded the expenditure £18,000. The acres in crop were 9,500 to a population of 6,000. Their exports for the last half-year were £19,700. In Wellington province the revenue for the last quarter in 1854 was £18,023, and the expenditure £10,329. Canterbury exported wool last year valued at £25,000; and the Government is in funds. Otago is also flourishing. New Zealand last year imported from New South Wales 872,100, and exported to it £218,800. The public debt is £170,000.

NEW SOUTH WALES.—The revenue for 1854 was £991,683, of which £351,059 came from the land; the exports were £3,619,630, of which the wool was £1,044,000 and the gold £891,753. In 1851 the gold export was 144,120 ozs.; in 1852, 818,750; in 1853, 548,052; in 1854, 237,800 ozs. The export of coal from the 13 Hunter River Mines was last year 192,000 tons. The imports from the British colonies was then £545,000 against £1,624,700 exports. The Public Schools are 460, with 28,000 pupils.

WESTERN AUSTRALIA.—The newly arrived Governor is Arthur E. Kennedy, Esq.

VICTORIA.—The stock of the unsettled districts is: horses 15,000; cattle 430,000; sheep 5,200,000. Mr. Khull gives the export of gold for the first half-year of 1855, 1,182,810 ozs., value £4,731,240; but for the next three months, 756,431 ozs.

The exports of the produce of Victoria are in proportion to the population, fifteen times that of the British Islands, and the Government expenditure eight times as much. Revenue, ending Sept. 30, £2,914,000.





